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TO

# GOOD HEALTH

Vol. LV, 1920

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J. H. KELLOGG, M. D., *Editor*

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Happy New Year

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GOOD HEALTH

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# The Editor's New Year's Greeting

For the first time in the now nearly forty-seven years since he took editorial charge of GOOD HEALTH, the Editor greets his readers face to face.

A whole generation of readers has passed away during this time, and a new generation has taken its place.

Yet a few of our old readers remain, even some of those who perused the very first number when this journal bore the name, "The Health Reformer."

Changes and wonderful progress have been made in the fifty-three years which have elapsed since the first issue of the little journal which championed an unpopular cause in the interest of truth.

Many battles have been fought and won.

Many hoary-headed errors have been investigated and exposed. A new day has dawned.

A movement for race betterment has begun which will go forward until still greater, and more far-reaching reforms have been accomplished.

The Editor greets this New Year with a heart full of gratitude for the wonderful progress which he has been privileged to see, and full of courage and optimism for the future; and he wishes for each subscriber, new and old, a Healthy and a Happy New Year.

# The New Year and the New Era

The New Year greets a New Era in health promotion and race betterment.

Never before in the last 2,000 years has there been so wide-spread and sincere an interest in the matter of physical preparedness. Never before has there been such a promising outlook in all activities and movements looking toward the physical betterment of men and women.

The world has been long and deeply concerned about the health and well-being of its cattle, sheep, pigs and poodle dogs, but it is just now waking up to a realizing sense of the value and significance of human health in relation to efficiency as well as comfort.

Old health and social organizations having direct bearing upon physical health which had long been asleep or at least inactive, have come to life and are bustling to make up lost time, and a host of new agencies with similar aims have come into existence.

Thousands of men and women to whom the war exigencies introduced the idea of simple living have become so pleased with the results that they have permanently adopted the new and better way.

Probably there is less meat eaten per capita in this country than ever before for a century at least.

The whole nation is becoming interested in dietetics. School boys and girls are becoming as wise about calories and balanced dietaries as were college professors five years ago. Working men and women are learning about proteins and vitamins.

The Social Hygiene Association is keeping up its war-time schedule in fighting vice diseases.

Child Welfare Leagues and Societies for the Prevention of Infant Mortality are arousing the public to action.

A nation-wide health movement in the public schools is creating not only in children, but in parents as well, a hunger for information about "right living."

The world is waking up, at last, to the necessity for fighting race degeneracy.

Good Health has been on the firing line in this conflict for a whole half-century and more, and rejoices at the evidences of victory in sight.

Prohibition, nation-wide, is an accomplished fact. The saloon has vanished, with its numerous brood of criminals and disease carriers.

The Government has placed a ban on opium and the whole list of narcotic drugs. And the campaign against tobacco has begun and will never cease until this abominable weed, "stinkingest of the stinking kind" (Charles Lamb), is dethroned from its place in decent society. A committee consisting of fifty of the most distinguished scientific men in America and Europe have associated themselves together for the purpose of making a thoroughgoing and exhaustive study of the tobacco problem in all its phases, and the result of their work will to be to bring out such a flood of scientific facts against tobacco as will convince the world that tobacco must find its place in the shades of limbo, with the whole category of soul-and-body-destroying drugs.

Good Health is full of optimism, and rejoices in the glorious prospect of race betterment activities which the New Year brings.

# How to Form Good Habits

When an act has been repeated so often that it is performed unconsciously and without effort of the will, it is said to be automatic. Its performance is almost mechanical. Such an act is properly called a habit.

Great light was thrown on the nature of habits by a series of experiments made by the great Russian physiologist, Pavlov. Many years ago, the writer spent a few days visiting Pavlov's laboratory in Petrograd. One day the physiologist said to me in fluent French, "Come with me, I will show you something very interesting." In a remote room of the laboratory we found an attendant and a beautiful dog in waiting for the experiment. For a moment all was exceedingly still. Not a person present moved a muscle; the dog stood motionless. Suddenly a musical note was sounded by some mechanism operated by the touch of a button with the attendant's foot, though no movement was perceptible; and almost instantly the saliva began to run from the dog's mouth in a trickling stream. No food was in sight, but evidently the dog's palate was somehow excited, his nerves of taste powerfully stimulated. For weeks this same note had been sounded whenever the animal was fed, and finally the sound had become so associated with feeding that it aroused the sense of taste and caused the flow of saliva even without food.

Pavlov showed that any form of sense stimulation might be similarly associated, forming what he termed a conditioned reflex. It was found, too, that such conditioned reflexes may be associated with almost any vital function.

Here is the explanation of habit. By many repetitions of simultaneous acts, we bind them together, so that when one of the acts is performed the others fall in automatically.

This interesting fact may be made of the greatest service, not only in the formation of good habits but in the correction of bad ones, and opens a wide field for teachers and trainers of youth, putting into their hands a means by which mind and character may be molded almost *ad libitum.*

# Save the Beaver

One of the greatest attractions of the out-of-door life, as well as one of its most instructive features, is the opportunity afforded for observing the activities of wild animals. Unfortunately man's perverted tastes and abnormal activities have led him to destroy many of the noblest features of the great out-of-doors wherever he has planted himself. He has destroyed forests, dried up rivers, and has exterminated most of the animals as well as the men who formerly peopled the wild. Only recently have we begun to see the necessity of making an effort to save a few remnants of the wild creatures which once peopled our forests and plains. Mr. Gifford Pinchot saved our forests. Dr. Hornaday, Superintendent of the Bronx Museum, saved the buffalo and started a movement which will save many of our native birds; and the New York State legislature began, a few years ago, a movement to save that most interesting of wild creatures, the beaver. These efforts to preserve the wild life of America are of highest importance, not only from the standpoint of natural history, but also because of the bearing upon the out door life of succeeding generations, who will, it is to be hoped, possess a greater love for the great out-of-doors than is common at present, and who will appreciate the thoughtfulness and foresight of those who are now interested in saving to the world a few of the noble specimens of Nature's handiwork which have been threatened with extermination.

We are sure our readers will be interested in an article in this issue about the Adirondack beaver and the successful effort to re-stock this interesting region with one of its lost denizens, for which we are indebted to the courtesy of the writer, Mr. W. C. Talmage.

The beaver is one of the most intelligent and interesting of native American animals. Ruins of wonderful earth-works and other evidences of its remarkable engineering ability are still to be found scattered over the greater portion of the continent; but like the red man with whom this sagacious animal once shared our wild places, the industrious beaver has disappeared from all except a few secluded regions. The successful efforts of the New York legislature to restore the beaver to the Adirondacks should encourage other attempts in the same direction.

The beaver is a harmless creature, a strict vegetarian, living on the bulbs of water-lilies and the tender bark of trees. It is hardy, multiplies rapidly; and it is not yet too late to rescue it from the oblivion to which the reckless depredations of the hunter and the trapper must certainly have consigned it without a definite and organized effort to save it from destruction.

# Miss Foley Launches a Good Idea

In answer to the suggestion of Dr. Dill Robertson of Chicago, that sick mothers need the aid of trained housekeepers more than of trained nurses, Miss Foley, head of the Visiting Nurses' Association of Chicago, suggests that the school curriculum shall be enlarged by the addition of "a course in the care of the sick into the eighth grades and the first year high school, it being given on Saturday morning if it can not be worked in any other way, but making it compulsory for every girl who gets a certificate from our public schools to know something about the home care of the sick.

"In this way, in time, we will cease to encounter in our homes the colossal ignorance in regard to personal hygiene and household sanitation which most women view so complacently; and if a girl has a natural aptitude in the sick room, we may help to develop it, so that she may be attracted into the nursing field."

Our present school curriculum provides for instruction about almost everything except those matters which of all things are the most needful. Girls are told all about how to make "angel cake," but not a word about how to apply a fomentation or to give a hot bath or to feed a baby. The school succeeds fairly well in preparing the boy for business and the girl for society, but neither one is prepared for life, which is, after all, the chief thing. The average high school graduate is much better informed about how to conduct himself in public than about how to live well and long at home. A reform is needed. Miss Foley's suggestion is a good one.

# A Noah's Ark Stomach

During the siege of Paris in 1870, foods of all sorts became somewhat scarce, and the meat supply in particular became so reduced that not only horses but dogs and other animals frequently appeared in disguise upon the bill of fare.

According to A. F. Davidson, Victor Hugo, writing to a friend at this time, remarked, "Our stomach is a Noah's ark into which every beast enters — dog and cat, horse and rat, mouse and elephant—they all meet there."

The great novelist's simile is a capital one. The description applies as well to the average American stomach as to that of Victor Hugo in besieged Paris.

The list of different animals incarcerated might not be quite so long, but it would certainly be long enough to represent quite a menagerie.

Certainly, human stomachs were never intended to be used as Noah's arks, menageries, potters' fields, or sepulchers.

# How the Body Defends Itself

Life is one continual battle between the body cells and the bacteria that swarm upon and within it. The bacteria are constantly endeavoring to work their way into the interior of the tissues from the skin and the intestines, where they are constantly present in countless numbers.

Their efforts are thwarted by living cells which they encounter. White blood cells swarm out from the blood vessels to meet and repel the invaders. Whenever, by accident or otherwise, bacteria obtain a foothold in the tissues there is at once a great increase in the white cells of the blood, especially of the microphags. After death the parasitic microbes meet no resistance. Within a few hours the whole body is swarming with the bacteria that have worked their way in from the skin and the intestine.

Shortly before death bacteria enter the blood in great numbers and are thus rapidly distributed.

## The Mucous Membrane a Living Barrier

Several lines of defense are maintained by the body against the micro-organisms that attack it through the intestinal canal and against the poisons which they produce.

The colonic mucous membrane vigorously resists the attempts of bacteria to penetrate the blood vessels and lymphatics. Its living cells swallow and destroy millions of bacteria daily. The slightest abrasion, however, opens the way for the easy entrance of virulent microbes. For example, Pasteur found that sheep took anthrax when they were fed with the spores of this microbe mixed with small splinters. The splinters produced small wounds in the mucous membrane, through which bacteria entered. The mucous membrane also retains certain poisons and excludes others.

A congested or abraded mucous membrane, such as exists in colitis, and such as results from the use of laxative mineral waters and other aperients and cathartics, cripples the defensive cells and opens wide doors for the entrance of harmful bacteria and bacterial poisons.

### Defensive Action of the Blood

In the blood, bacteria encounter the white blood cells, some forms of which, as first shown by Metchnikoff, have for their function the destruction of bacteria. These cells—the so-called "neutrophiles" and "small lymphocytes"—are always greatly increased in cases of pronounced intestinal toxemia, as they are also in ordinary cases of constipation. This condition favors the entrance of bacteria into the blood.

These germ-destroying blood-cells are also increased after the use of a cathartic to unload the intestine. This is doubtless the result of the congestion produced by the drug, and the consequent diminished resistance of the mucous membrane. The most highly poisonous of the toxins produced in the alimentary canal are certain tox-albumins which resemble the venom of snakes in their virulence. The healthy mucous membrane is almost wholly impervious to these highly active poisons; but the congested or abraded intestine permits them to pass into the circulation. This fact accounts for the distressing symptoms experienced by some persons after taking a cathartic.

In the blood are found various alexins, sozins, and other bodies that combat the invading bacteria.

### Defensive Action of the Liver

The liver combats bacteria by destroying and eliminating them. It also destroys to some extent the bacterial poisons that get through the mucous membrane. Certain poisons,—such as skatol, indol, and phenol—are distoxicated by combination with sulphuric or acetic acid. Glycuronic acid is also formed from sugar or glycogen, and is used for the same purpose. It is doubtless for this reason that a good store of glycogen in the liver is essential to insure its efficient functioning as a poison-destroying organ. Glycogen is formed from carbohydrates. A liberal supply of carbohydrates is thus essential to maintain body resistance.

Roger, the brilliant pupil of Bouchard, maintained that the bile modifies poison-forming bacteria so they are unable to produce toxins. It is also known that the bile prevents the growth of many harmful bacteria, although it does not actually destroy them. It was noted, however, by Roger, that the bile increases the toxicity of bacterial poisons which have already been produced. This explains the relief which is often experienced after the removal of a large quantity of bile from the stomach by vomiting or the use of the stomach tube, or even by a dose of calomel or a large dose of salts or laxative mineral water. Lauder Brunton many years ago called attention to the fact that the bile from a biliary fistula is quite different from ordinary bile, lacking its bitterness and probably much less highly toxic. Ordinarily the bile is in large part reabsorbed from the intestine, and hence becomes concentrated. In cases of biliary fistula, absorption does not occur.

Roger showed that the liver cells destroy poisons brought to it in the blood. Some poisons are actually burned up by oxidation; others are distoxicated and rendered harmless.

"Lauder Brunton showed that the liver destroys the toxin of diptheria, and Dixon and Lee showed that the tolerance shown to tobacco by smokers is due to the fact that the liver destroys the nicotine." If the liver possessed an unlimited capacity, the use of tobacco could do no harm; but its protective power is limited. When the limit is reached, the smoker begins to note ill effects.

### Other Defensive Means

Other poison-destroying organs are the thyroid gland, probably the lymphatic glands, and especially the suprarenal capsules. An important special function of the last-named glands is to destroy certain poisonous pigments which are produced in the putrefaction of animal proteins in the intestine.

The kidney and the skin eliminate germs probably in much greater numbers than is generally supposed. It is on this account that attention must be given to the excretions of the skin and the kidneys, in cases of typhoid fever, as well as the stools, to prevent infection.

## The Ileocecal Valve

Nature has provided a remarkable defense against the bacteria and bacterial poisons developed in the food residues found in the colon by placing at the junction of the small intestine with the colon a check valve so ingeniously contrived that nothing that has once passed into the colon can get back into the small intestine. Even gas, as well as solids and liquids, is effectively confined to the colon. This is necessary for the reason that the colon is better prepared to deal with germs and their poisons than is the small intestine. Absorption from the colon takes place very slowly. Not more than one-twentieth as much fluid is absorbed from the colon as from the small intestine.

Adolph Schmidt called attention years ago to the relation of ileac stasis to intestinal toxemia. He remarked that putrefaction in the colon did not give rise to the indican in the urine in any considerable quantity, and that the presence of much indican in the urine was due to the reflux of putrefactive material from the colon into the small intestine through an incompetent ileocecal valve. The study of the clinical histories of some hundreds of cases in which Dr. J. T. Case has proved the ileocecal valve to be incompetent by x-ray examination has convinced me of the accuracy of Schmidt's observation, which is all the more remarkable, since at the time his statement was made the x-ray means of diagnosis of incompetency of the ileocecal valve had not yet been developed. It seems probable that in practically all cases of intestinal toxemia the ileocecal valve is incompetent.

## Carrel's Remarkable Experiments

Carrel, of the Rockefeller Institute, made a remarkable experiment that clearly demonstrates the influence of toxins upon living cells. He has demonstrated that living tissues of various kinds could be made to grow in a suitable medium. He observed, however, that after a few days the rate of growth was slowed, and ceased at the end of a couple of weeks. His experiment would have ended here but for the interesting discovery that by changing the nutrient media, so as to wash away the poisons which the tissues had produced, he was able to extend this period of growth for another two weeks. By renewing the nutrient media and thus cleansing the growing tissue of its waste products every fourteen days, Carrel was able to extend his remarkable experiments for many weeks. The rapid rate of growth gradually diminished, however, until it finally ceased, and the death of the living cells terminated the experiment. This is exactly what takes place in the body as the result of the poisoning of the living cells with the poisons absorbed from the intestine. So long as the body is able to keep itself free from poisons the vitality of its tissues is maintained; but when the liver, kidneys and other excretory organs begin to fail, poisons accumulate, degenerations appear, senile changes are apparent, and death ends the scene.

The influence of the poisoning-destroying glands in protecting the body was well demonstrated by a modification of the above experiment, in which Carrel applied the juice of thyroid gland or spleen of a very young animal to the growing tissue. The effect was most astounding. The rate of growth was stimulated to such a degree that the tissue increased in twenty-four hours to forty times its original bulk. Carrel was thus enabled, by the use of thyroid juice, not only to prevent the degenerative influence of the tissue poisons shown in the gradual slowing of growth and finally death, but to produce an opposite effect—

increasing the rate of growth and apparently making it possible to continue his experiment in the artificial growth of living tissues for an indefinite period.

No one who has had the privilege of witnessing Carrel's wonderful experiments at the Rockefeller Institute can possibly doubt the pernicious influence of toxins upon growth and activity.

# Why Cathartics Cause Autointoxication

Clinicians have long noted that laxatives often cause great exhaustion and sometimes even fainting and other distressing symptoms. One explanation of this is the presence in the colon of liquid material which encourages the absorption of toxins.

Another, and a much more potent cause, is the exaggerated retroperistaltic action excited by laxative drugs of every sort, as has been conclusively shown by Case and other roentgenologists. The ileocecal valve being incomplete in most cases of chronic constipation, the effect of reverse peristalsis is to cause a reflux of the putrid liquid food residues into the small intestine. The colon has few absorbents and so takes up toxins slowly, while absorption by the small intestine is very rapid.

In the words of Von Noorden, "Nothing is so bad as the chronic use of drugs."

# Graham Bread Gaining Ground

Before the war the public had been so generally led astray by the deceptive teachings of the millers about the harmfulness of bran and other coarser elements of the grain that superfine flour bread came to be almost universally employed in most civilized lands; but the doctrines taught by Sylvester Graham in the forties of the last century had not been altogether forgotten, and with the outbreak of the war and the establishment of food control in all the warring countries it was not long before the public was made to understand the folly of throwing away the best part of the grain, feeding to pigs and other domestic animals the choice elements needed for building up strong men to stand in defense of their homes and their country.

Now that the great war is over, it is pleasant to know that not a few of those who have tested the good qualities of bread made from whole wheat are profiting by their experience and refusing to return to the denatured fine flour bread of pre-war times.

Sir Charles Cameron, medical officer of health for Dublin, Ireland, in a late issue of the *Irish Independent,* calls the attention of the Irish people to the greater value of bread made from the whole wheat and urges its adoption in place of the popular white loaf.

# The Committee of Fifty

The Committee of Fifty, organized to study the tobacco problem, is getting well started in its work. Professor Hooker, of Johns Hopkins University, assisted by some of the ablest physiologists, chemists and clinicians in the United States, is beginning a most important research, which will be conducted with such care and under such distinguished auspices that none will be foolhardy enough to dispute the findings.

Professor O'Shea, of the University of Wisconsin, is conducting another equally important research, which is being participated in by numerous distinguished university men, who are making the most exhaustive study of the influence of tobacco upon the human organism that has ever been undertaken. Professor O'Shea's research has been financed by a good friend of Good Health, a philanthropist whose donations have been world-wide in their beneficence.

The Committee has undertaken to raise a fund of $50,000 for use in its various undertakings, and Good Health does not hesitate to say to all its readers that never has there been offered a better opportunity for investing money in such a way as to render most needed service to human welfare than is offered by this enterprise. Contributions may be sent to Good Health or direct to the Treasurer, Professor Irving Fisher, Yale University, New Haven, Conn.

# Their Own Testimony Condemns Them

Anyone who doubts the truth of the charges made by opponents of tobacco against the "weed" has only to read the advertisements of the various brands of cigars and other forms of tobacco to find confirmation of the principal charges made.

For example, when one tobacco advertisement reads, "Does not upset your stomach," the statement is a confession that other brands of tobacco do upset the stomach and that the fact is well known to consumers as well as to the manufacturer.

When another advertisement reads, "Does not affect the nervous system," what better testimony is needed that the general effect of tobacco is to injure the nerves?

And when still another manufacturer claims for his particular brand that it "will not injure the heart," he avers by clear inference that other brands do injure the heart.

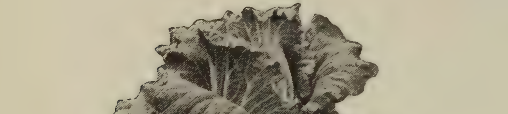
And when another gives prominence to the assertion, "Smoke as many as you like, they will not hurt you," he notifies the public that other brands of cigarettes are harmful.

The tobacco vendors begin to see that such advertising may have a "boomerang" effect and are cautioning the trade about making "health claims" for their products. These men, who do not hesitate to debauch boys and girls by their enticing and lying representations and to destroy American men to enrich their pockets, are getting wary. They see that their days are numbered, but they will not surrender without a bitter fight, and will do their utmost to "make hay while the sun shines."

J. H. Kellogg

# Autumn and Winter Greens—Pai Ts'ai

W. A. ORTON



Pai ts'ai, the new salad plant
Some of the outer leaves have been removed

To have a constant supply of leafy vegetables available the year around is necessary for the preservation of health. To have these in variety, and perfectly fresh and attractive in appearance, is necessary to the full enjoyment of the vegetable dietary; but the climax is not reached unless one adds the joy of production, the hours of cool morning and evening labor in the garden, the study of the culture and adaptation of new plants, the triumphant harvesting of something new, that adds a new flavor, or fills in a vacant period in the seasons.

It is during late autumn, winter, and early spring that the garden of greens needs reinforcement. A number of plants possess special merit—witloof, endive, French sorrel, and pai ts'ai. We recommend them all. We would not willingly stop growing any one, but we particularly advise a trial of pai ts'ai.

Perhaps you have been growing this under another name—pe-tsai, Chinese cabbage, or celery cabbage, as it is variously called—but part of the pleasure of the real gardener lies in knowing things by their real names. We have this on the authority of Frank N. Meyer, the agricultural explorer of the Department of Agriculture, who spent many years in travel in China in search of new plants, and recently lost his life there. Mr. Meyer sent back seeds of many strains of this vegetable, with advice that the Chinese name is most correctly rendered *pai ts'ai,* the "ai" being pronounced like *i* in *pie,* and this name is used by Dr. David Fairchild as the official spelling in the Department of Agriculture.

The botanists call the plant *Brassica Pekinensis,* and tell us that it is related more closely to the turnip than to the cabbage. Possibly during the centuries that the Europeans were modifying the wild turnip by selecting forms with enlarged fleshy roots and thus producing our numerous varieties of rough-leaved turnips, or centuries earlier, the Chinese were fostering the development of the leafy portion of their turnips and producing the various kinds of pai ts' ai.

The best of these forms an upright, cylindrical head, loose as compared with a cabbage, with light green outer leaves, but white and tender at the heart, and of fine flavor in cool weather. Some varieties have tall, narrow heads, others shorter and thicker heads, while in some it is the petioles and leaf blades that become thickened. Seedsmen usually supply the heading sorts.

Pai ts'ai is an autumn crop. Like the turnip, it develops a strong flavor in the heat of the summer, and quickly runs to seed, but if sown in midsummer and set out to mature in the cool fall weather, it develops well.

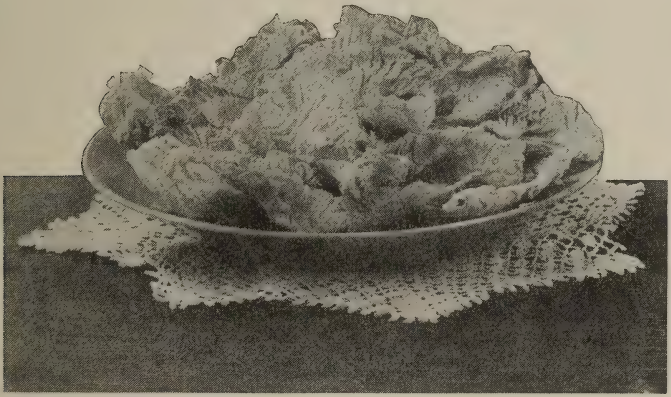
The seed should be sown about July 15 for the latitude of Washington, D. C., in a well-prepared seed-bed. The plants come up quickly and are soon ready for transplanting to their permanent place. The planting distances should be at least 24″ x 15″ in gardens, and 3 feet x 15 inches in field culture. The soil should be rich and friable. Manure heavily, or use commercial fertilizers freely, and water, if possible, in dry times.

It is important to keep pai ts'ai growing rapidly without any checks or setbacks. Very large heads may be grown by such means.

Pai ts'ai withstands light frosts but not severe freezes, and the frozen leaves do not keep well in storage. It should therefore be taken up at the approach of severe weather, with the roots and all the earth that will adhere to them, and packed in a shallow pit, with the roots in moist earth. Cover with leaves or straw and pine boughs and add more covering according to the degree of cold expected. The pai ts'ai must not freeze.

When taken from storage, the heads will be found blanched, crisp, and tender. The centers make one of the most beautiful and delicate salads that can be served. The entire heads, cut and boiled, make excellent greens.

Cellar storage is also practiced, and Mr. Meyer has reported that the large heads keep for a considerable time when merely hung to the rafters of a cool storeroom. We find the quality of pit-stored pai ts'ai so perfect that we do not use any other method. Well-grown pai ts'ai should keep until March. It will be found a welcome addition to the table, supplying a taste of "something different." For salad purposes it combines particularly well with fruits like apples, oranges, and grapefruit.



A plate of salad from the heart of pai ts'ai

# The City Moves to the Country

Taking the city to the country is now to be a part of the program of the American Red Cross.

What does that mean? It means that when the Home Service department of the Red Cross is enlarged to the extent now planned for it, following the roll call held Nov. 2, 1911, the woman in the country will be able to get everything in the way of emergency aid that her city sister gets. It means that when something goes wrong in an out-of-the-way corner of the most rural district in the most isolated county in the United States, there is going to be some one there to "fix things up." It means that in places where there has been illness and death and disaster there will soon be trained workers to give their services and to help the local population in solving their own problems.

Taking the city to the country means that if the baby takes poison by mistake in some lonely spot, his frantic mother will not have to travel fifty miles to get the information she needs concerning antidotes, just because the country doctor is off in another direction helping to bring into the world another baby to take the place of the one who may die of poisoning. No! Taking the city to the country means that the Red Cross Home Service Department is going to make it possible for all mothers in the land to know what to give baby if he does get hold of poison. It is going also to instruct mothers how to prevent such calamities from happening.

National, divisional, city and rural chapters are co-operating to form a chain of workers which will in time surround the men, women and children of this country with the knowledge they need in first-aid matters; with trained nurses for emergency needs; with dietetic knowledge which, practised within the household, will help decrease illness and make for greater health; with recreative outlets for all. They will work in co-operation with other organized social agencies in the solution of rural problems.

The roll call seeks 15,000,000 members and $15,000,000, which will be largely used in America's own "front yard," and which will bring into home life the benefits of the vast knowledge of public health questions which has accrued to Red Cross workers because of their work during the war.

# The Family Life of Charles Darwin

### LOUISA A. NASH

The first question is—Where was his home?

Seventeen miles from London, four from any railroad, and in the heart of the absolute country of Kent lies the ancient village of Down. There is but one street, lined with the cottages and gardens of the workers in the orchards and vegetable farms which help to supply the distant metropolis. A general store where the cottagers get their supplies and the children their candy, a blacksmith's shop and forge, and just four houses of the better class and an old, old flint-built church, with a splendid ancient yew tree at the graveyard gate, and you have the complete village of Down. But we must not forget the village pump, sunk through the chalky strata to reach the abundant pure water below, at the cost of Miss Wedgwood, Mrs. Darwin's sister, a kindly and beneficent old maid who lived in one of the four houses of the village.

The Darwins' house stood, behind its wall, at the far end, past the village street. The house was the essence of comfort without show. The garden behind, looking over an expanse of Kentish fields and farms, was spacious and well kept, with but one good-sized greenhouse, where Mr. Darwin's experiments on the growth and fertilization of plants and flowers were carried on. The home grass field beyond the garden was bordered with a neat gravel walk, where Mr. Darwin took his daily exercise on wet days.

For many years the Darwins lived there and brought up a very noteworthy family of five sons and two daughters, who, when grown up and occupying their own well-earned places in the world, still frequently returned to visit their familiar and most happy family home.

They were hospitable and very kindly folk. Mrs. Darwin was the Lady Bountiful of the cottages, visiting and helping all who were sick or in need, frequently sending from her own table meals to ailing people. Her almoner was the old butler, who had lived with them for many years, since, indeed, the famous five years' voyage of "The Beagle," when he took care of Mr. Darwin in his almost constant suffering from seasickness, which left him an invalid for the remainder of his life.

Mr. Darwin took his own regular part in the village. He was the perpetual treasurer of the village Friendly Society, keeping and rendering their accounts and investing their savings, and being always present at their annual gala days, when the cottagers, dressed in their best, attended in procession the parish church, and enjoyed the banquet open to young and old.

I must not forget one more inmate of the family. In Mr. Darwin's study (which was also his book room until the books expanded to cover all the passages and book shelves possible in the house), opposite the open fireplace, was old "Sally's" basket home. She was a good-sized white bull terrier—her master's friend and companion, indoors and out. I think "Sally" paid for her keep by providing Mr. Darwin a frequent specimen for experiment. In the reasoning powers of animals—he could not well have found a more sensible one. She lived with that family a long and happy life.

During all those years Mr. Darwin's life of experiment and authorship passed without ceasing. One book after another was always in progress. Their scope and variety is amazing. Ill health and weariness never interfered with that work—wherein Mr. Darwin lived up to a favorite motto of his—"It's dogged work as does it."

From the issue of "The Origin of Species" and onwards Mr. Darwin was the mark constantly for bitter, ignorant and heartless criticism. Religious publications, almost without exception, were prominent in this. During the years that we were in constant intercourse with him no word of resentment or retaliation fell from his lips. His only reply was, "I am a student of facts and always have been. The theologians have their own field and scope—and they also must take account of facts. If such facts appear to conflict with religion as commonly taught, it is their province to reconcile them, not mine." But to us he always revealed himself in character as a truly religious man and as believing that his teaching harmonized with the essential doctrines of the Bible.

Mrs. Darwin regularly attended the Down parish church, although the Vicar was most persistent in his attacks on her husband. I used to wonder how she could sit unmoved under a weekly repeated shower of abuse. It got too much for us and we removed our attendance to a neighboring parish.

Our gardener was a great admirer and friend of Mr. Darwin, who characterized him as one of the best natural observers that he had ever met. There was one trait, however, that these two plant-lovers had not in common. Mr. Darwin both used and cared for the plants that he was at any time engaged with for his experiments, but when their usefulness was passed, his special interest in them was also gone, and he would turn them over to his humble follower. So it came about that our orchid house was filled with plants that had their history in the printed book. The same was true of primroses, sweet peas and other plants. I used to fancy that his son, Frank (a well-known botanist, and afterwards professor at Cambridge University), who was for years associated with his famous father in his experiments, took a more personal and lasting interest in the individual plants that they handled and studied together.

I have already noted the continued ill health and delicacy that was the handicap under which Mr. Darwin's literary work was done. His day began with a light early breakfast in his study that was prepared for him overnight. His daily diet was very simple, and was Mrs. Darwin's special care. He took his place at the late family dinner, but his meal was especially arranged for him to avoid indigestion, which lay in wait for him all the time. He was very sensitive to chill and cold, using specially warm slippers which were set for him under the dining table. On his daily walks he wore a heavy Scotch plaid, wrapped round his shoulders.

He was a very friendly man. In his home, and especially in the drawing room, the gathering place for the family and any guests at the close of the day, he chatted without reserve, and listened to music, of which Mrs. Darwin and the children were very fond. He regretted to me once that he had suffered his own early taste for music to be overlaid and forgotten in his scientific pursuits, saying that it was a great mistake, as he believed that now the musical compartment of his brain was atrophied beyond recall.

Our privilege of admission to their family circle and to the friendship of the great student, writer, and discoverer, at its head can, of course, never be forgotten.

# Saving Lives with Milk

In Poland, you get no food without your ration card. But no ration card can get milk. Every drop of this precious beverage is saved for the very sick who especially need it, and for the babies—and even for them it is not always obtainable.

The china shops in Prague displayed neat rows of opaque white china jars. A Red Cross worker noticed the deserted appearance of these stores and asked the reason. Her native host, who could not speak English, ran his finger down a column of words in his dictionary until he came to the word "mlekarna"—dairy.

"But," began the Red Cross girl, mystified. Then it dawned on her. There was no milk to put in the shining little containers.

More than 50,000 cans of condensed milk were used to make hot cocoa for the youngsters in the schools of Archangel and adjacent districts in northern Russia, when the Red Cross went in there and gave new life to thousands of half-starved anemic children.

American condensed milk did more than anything else to save the lives of six thousand refugees returning to their ruined homes in Poland. These unfortunate people were camped out near a railroad siding, under brush huts and in holes in the ground, and were eating soup made of grass and roots gathered in the fields, when the Red Cross arrived with its supplies. Besides milk, flour, rice and beans were distributed.

# The Adirondack Beaver and Its Habits

### W. C. TALMAGE

The quiet waters of an Adirondack lake drowsed placidly in the twilight. The glories of the dark green balsam and hemlock, contrasted by the red and yellows of the birches, had faded with the setting sun. Slowly the rising moon began to tip their leaves with silver. From the westward could be seen the form of a small brown object swimming through the water, leaving quivering lines in its wake. Suddenly the stillness which was hanging over Seventh Lake was changed by a loud report. It was a beaver giving the danger alarm by striking the water with his tail.

This is one of the very many wonderful habits of the beaver, which combines intelligence with natural engineering skill to a much greater degree than any other of man's four-footed friends. Then too, in the early days of the Adirondack and Mohawks the beaver skin was the unit of exchange. If the Indian or Colonist wished to buy supplies, such as tobacco, beads, vermillion, powder, fire water, etc., it cost so many beaver skins. The Indians very often were forced to take the short end in the exchange or barter. This unfair way of dealing or bartering was very largely corrected when the great Hudson Bay Co. came into existence in 1670. At this time all kinds of peltry from the Adirondack Mountain Country were taken in at Montreal, Canada, and afterwards shipped to London. It is not at all difficult to understand that the Adirondack beaver has had an important place in history and, along with the fur trader, added much to the early settlement of the Great North Woods Country. The greatest admirers of this wonderful rodent are the ones that have seen them at work felling trees, building dams and houses. Personal observation during May, June, July, August, September and October from 1908 to 1919 attest for the above statement.

A Beaver in Captivity

The beaver held an important place in the legends of the Indians. In fact, the Adirondack regions were given by the Iroquois tribe the name "Kohsaraga," which means "the beaver-hunting country." Every school child is familiar with the story of Pau-Puk-Keewis, who, when pursued by Hiawatha and his hunters, appealed to "Ah'meek, the beaver," to be changed into one himself. "Ahmeek" consented, even though the vain Pau-Puk-Keewis insisted upon being ruler and "ten times larger than the others." His last demand proved his undoing, however, for "puffed with pride and feeding" he could not pass beneath the doorway of the lodge.

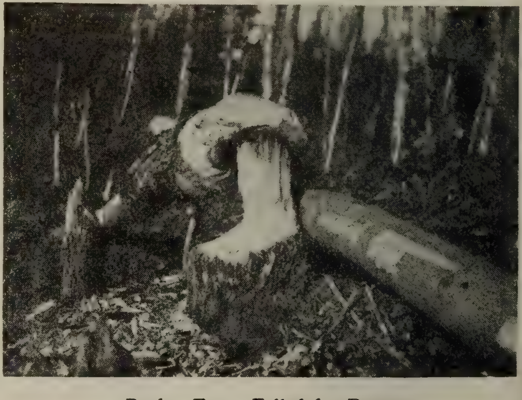
Captured by Hiawatha,
"Six tall hunters, lithe and limber,
Bore him home on poles and branches,
Bore the body of the beaver;
But the ghost, the Jeebi in him
Thought and felt as Pau-Puk-Keewis,
Still lived on as Pau-Puk-Keewis,"

Some Indian tribes believed the quaint theory that the beaver is a reincarnation of man to work for past offenses. Others believed that a certain sacredness is attached to the animal; for while its flesh was eaten by them, the bones were carefully kept from the dogs. *The teeth of the beaver* were also used by the Indians for chisels before they discovered the value of metals.

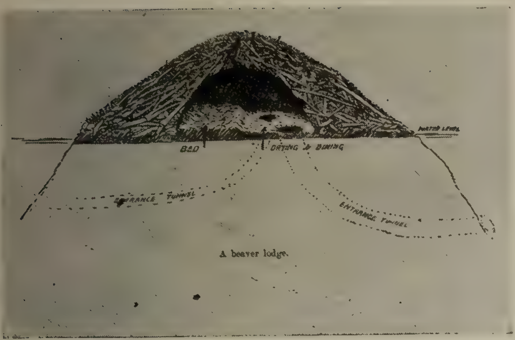
Work of the Beaver's Chisel-Like Teeth

The New York legislature of 1903 and 1906 appropriated $1,500.00 to begin restocking the Adirondacks with beavers. Late in the fall of 1904 the state of New York purchased seven beavers from the Canadian exhibit at the St. Louis exposition, liberating two in the south branch of the Moose River and the remaining five in a mountain stream feeding Big Moose Lake. One of the seven died from an injury. During the year 1906 the state made arrangements with the United States Government for the purchase of twenty-five beavers to be shipped from the Yellowstone National Park. Of this number, twenty were delivered. The first shipment of eight arrived at Old Forge in September 1907—four having died in transit. The remaining four were liberated in an inlet of First Lake, Fulton Chain. In October of the same year the second shipment of eight arrived in good condition and were liberated in state land adjacent to Fourth Lake. The third shipment of two arrived the latter part of October and were liberated in Little Tupper. In addition to the ones received from the Yellowstone and the St. Louis exposition, fourteen were liberated by private individuals, as follows: Mr. Litchfield twelve, Mr. Stevens one and Mr. Woodruff one, making a

Exterior of a Beaver Lodge



Poplar Trees Felled by Beavers

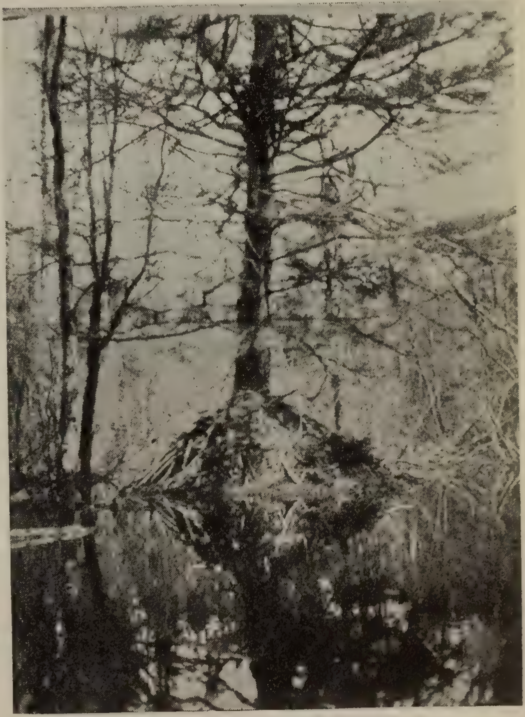


Cross-Section of a Beaver Lodge

total of thirty-four. In the past ten years these thirty-four have multiplied very rapidly, now numbering throughout the North Woods many hundreds, and again they have taken possession of their ancient heritage in the Adirondack Mountains.

The average beaver weighs thirty-eight pounds and measures from tip of nose to end of tail, forty inches. They mature in two and one-half years and live to the age of from twelve to fourteen years. Their color is a mahogany brown and becomes darker with age. *They subsist on the bark of poplar and birch trees and in some localities on lily pad roots, but not upon fish or flesh* of any kind. Their eyes are round and about a half inch in diameter, affording only fairly good sight at short distance. The ears are short and stubby, but the sense of hearing is very acute. In fact they depend upon their hearing and sense of smell for protection from man and many wild animals. The front feet are in reality like human hands and are used in holding limbs while *removing the bark for food,* for clasping a tree while in the act of felling it, or in holding mud balls up under their chins when swimming with them for the purpose of repairing houses and dams. Their hind feet are webbed like a duck and have a spread of from seven to nine inches. This web foot gives them great propelling power when in the act of swimming. They have twenty teeth in all; sixteen molars and four incisors. The front surface of the incisors is very hard, while the inside is softer, allowing them to be self sharpening and to be worn to a chisel point. It is with these incisors that they do their greatest work in cutting or felling trees which measure from three to eighteen inches in diameter. The most perfect chips are made by the beaver at the age of from three to five years, while their teeth are at the best.

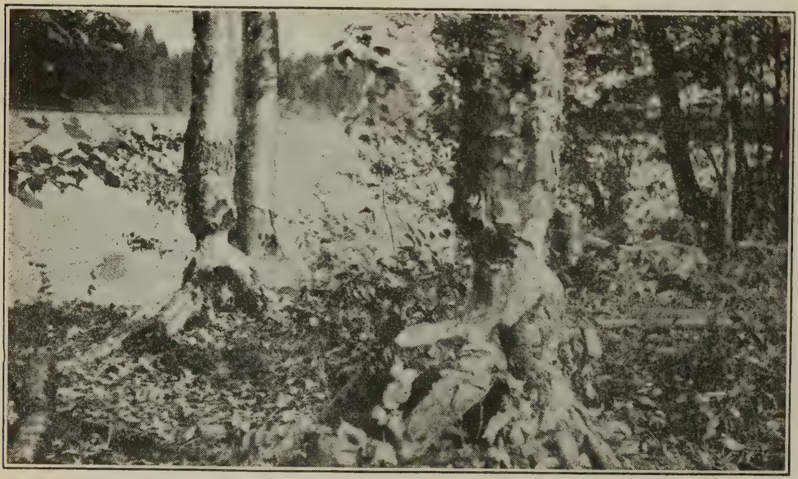
Much has been written as to the length of time a beaver can remain under water. In a test made in 1916 on Seventh Lake, the exact time was two minutes. Some writers make claims to a period of ten minutes, but the above-mentioned time of two minutes appears to be more correct. No mammal has been so grossly misrepresented as the beaver—particularly his tail. A very common belief is that the tail is used as a trowel in chinking the openings in houses and dams. This may be true, but after having seen them at work, the writer is inclined to the opinion that they use their feet or hands in place of the tail. The tail



Beaver House Built around a 16-inch Tree has a scaly appearance, but no scales actually exist. They use their tail in striking the water to give the danger alarm; also as a rudder when swimming on the surface or under the surface of their ponds or lakes. Another use is as a brace to their body while in a sitting position as they are felling trees. The Adirondack and Mohawk Indians considered the tail a delicacy when served in a stew.

Beaver Dam, Hiss Pond, Fulton Chain, Adirondack Mountains

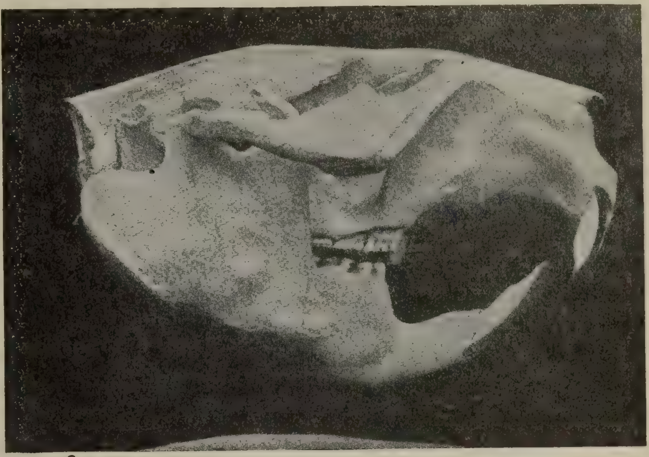
Two to five baby beavers are born the last of April or first of May each year, and are very soon in the water with the other members of the family. When two or three weeks old they leave their mothers' milk and subsist on the *tender bark of some shrubs*. Late in June the different families (in a colony) start out upon their summer outing, and cover large tracts. It is at this time that the two and a half year old sons and daughters choose their mates. It is quite true, too, that the beavers are naturally very sociable, and this is strongly manifested by their desire to mate. Some time in September they commence their return journey, always taking up the old house, unless in their absence a forest fire has destroyed the wood supply. Naturally this would mean finding a new location. After having selected their homes, late in September, they enter upon their busy activities in repairing dams and houses. Following this they gather their food supply of limbs, which are anchored in the water adjacent to the house. The collecting of this source of food supply is kept up until the ice forms over and affords protection during the very cold winter. The food supply of limbs is always within a few feet of the house, so that when meal time arrives they swim out from their comfortable mud-plastered houses, cut off a piece of limb with their incisors and take it back into the house, where they enjoy a good meal of tender bark.



Beaver Cuttings, Seventh Lake, Adirondack Mountains, 1918

The beaver house is always built within a dam, and constructed of short lengths of limbs, stones, muck and fiber roots. After taking on a form very similar to a miniature hay stack, the beavers work up from under and cut out with their teeth the interior, leaving an oval shaped room with the floor about five inches above the water level of the dam. The water level is controlled by the height of the dam. They are very clever in the use of their feet or hands in chinking the openings and plastering the top surface. Beaver houses always have two entrances, which are from the base and under water, no opening of any kind being above the water line. The principal reason for the entrance being under water is the protection afforded from unfriendly wild animals, such as the fisher, wolf and bear and even man himself. One big room comprises the oval interior, with one part of the floor a little above the main floor which is their sleeping quarters. Before winter sets in, the exterior of the house is mud plastered. Very little ventilation is required, as the beaver is of low respiration. In many parts of the United States the beavers have their homes in banks of streams or lakes and which are known as burrows, but such is not the present case in the Adirondacks. Beavers are model housekeepers and their cleanliness is very pronounced.

The intelligence shown in dam building is truly most wonderful, and it is in work of this kind that one finds their masterpieces. For a moment just imagine this little animal, weighing thirty-eight pounds or more and measuring forty inches over all, anchoring logs and limbs in a creek or a river in such a manner that the branches are down stream. After the frame work has taken on shape, the next operation is to chink the openings with muck and fiber roots. So perfectly is this done that the water is held to within an inch of the top of the dam. Then to provide against spring freshets taking off the muck from the top of the dam, they build a spill-way to care for the extra water. In all dams there are runways, or canals, leading to the two (under water) entrances of the house. Should there be an unusually severe winter, causing ice to form almost to the bottom, the canal or runway would still be from a foot to eighteen inches below the ice, leaving plenty of water. This seems further proof of their intelligence. Then, too, if the house should be broken into, they could get out into these canals and be protected.



Beaver's Jaw showing Molars and Incisors

In the 16th century beavers were very plentiful throughout the Adirondacks, and one of their dams at the foot of Eighth Lake is still quite well preserved. Permission was granted by the Conservation Commission in 1916 to fell a thirteen-inch white cedar tree that had grown up on the dam. The ring growths of this tree showed the dam to be in the neighborhood of two hundred fifty years old. Another proof of the age was determined by drilling several test holes in the ground work, no evidence being found of decayed limbs or trees.

One never grows tired of watching the activities of this wonderful little rodent.

# The Smokers Were "Winded"

Dr. Frederick J. Pack, Professor of Geology in the University of Utah, in the "Foreword" of his admirable work entitled "Tobacco and Human Efficiency," published by the Mormon church, tells an interesting story of a hike of forty college men which he conducted in a biological observation of a Nevada mining district. Here is the **story:**

"During the afternoon of the second day of reconnaissance work it became necessary in the mapping of some general geological features to ascend the principal mountain of the district. After a brief conference at the base of the peak, the men started off. The group soon thinned out into a long, knotted line, such that when those at the head had gained the summit those at the rear were scarcely more than half way up the slope. The writer reached the top with the first small squad, and while awaiting for others to arrive, he talked leisurely with those about him concerning various more or less important subjects. Some one in the group ventured the query as to why certain men were always in the rear, and another asserted that in this case they were all smokers.

"Although the matter was discussed but briefly and then dropped, it started the writer upon a long line of observation. At first he placed but little confidence in the opinion expressed by one of the men that even a moderate use of tobacco incapacitates a man for strenuous mountain climbing, yet the subject seemed so vital that he determined to keep it in mind. During the following week the writer made note of the fact that almost without exception the same men were late in reaching camp night after night, and strangely enough they were all smokers. It seemed probable, however, that this might be accounted for on the assumption that they had leisurely strolled into camp while enjoying their pipes.

"Some time during that week the work outlined for one of the days was completed slightly later than mid-afternoon. It was suggested by some one that the party take a 'hike' over the hills to a spring probably five miles distant. The entire party agreed and was soon off. Before half a mile had been covered, the competition of youth had brought every individual into a swinging run. The course was not marked by path or road, but extended over rolling hills here and there interrupted by narrow, steep canyons and deep ravines. In about one hour those who had kept the lead reached the spring and then waited in the scanty shade of nearby cedars for others to arrive. After waiting for probably half an hour, and when scarcely two-thirds of the party had reached the spring, the return trip was begun. The stragglers were picked up at various points along the homeward course.

"That night after supper the matter of the 'hike' came up for discussion, and those who did not reach the spring came in for no little criticism at the hands of their companions. The reasons given, however, seemed ample: one had separated from the group and lost his way; another had sprained his ankle; another had broken a shoe lace; another had stepped on a cactus plant and stopped to remove the spines; and another had remained behind to assist a companion. The fact, however, that practically every man who had failed to reach the spring was a smoker, made a deep impression upon those present.

"Experience with various groups of college men year after year gradually brought the writer face to face with the fact that smokers are far less active in field work than are non-smokers. They almost invariably fall behind in long marches and quick steep climbs. Whether, however, this is due to inability or disinclination is quite another question.

"On a subsequent occasion the writer conducted another party of college men over one of the desert mountain ranges west of Great Salt Lake. Upon getting off at the nearest railroad station it was learned that the expected conveyances had not arrived and that the party would have to walk some seven miles to camp. No time was lost in getting started, as the sun was then but a short distance above the horizon and the path was but poorly marked and unfamiliar to every member of the party.

"The group started off on a brisk walk which almost immediately changed into a swinging run. The writer fell into one of the rear groups so that he might study at first hand the attitude of smokers toward long, strenuous activity. Note was made of the fact that immediately after the running began every pipe disappeared — a thing which of itself has a remarkable meaning. For the first mile none of the men showed marked signs of lagging, but from then on the smokers gradually fell farther and farther into the rear. For the purpose of learning whether they were faltering because of inability or indisposition, the writer tried in many ways to encourage them to greater exertion. The response at first was good, but of short duration. The writer ran for more than a mile side by side with a strong, robust fellow and encouraged him at practically every step. Finally he sank to the ground and explained that it was absolutely impossible for him to go further. Other smokers were overtaken, but each one in turn gave up the race and walked slowly toward camp.

"That night the first group of men to reach the cabin consisted wholly of non-smokers, then came a single smoker, then more non-smokers, then smokers and non-smokers and finally smokers alone. The last men to come in were fully an hour behind the leaders. The writer's experience with the smokers on this occasion impressed him very strongly with the belief that they remained behind primarily because they could not help it. He had seen them again and again resolutely spring forward and quickly lapse, apparently through sheer fatigue.

"Another opportunity for the testing of this particular point presented itself the same season. During the course of a trolley ride to the field it was observed that nearly one-half of the men were indulging in the use of tobacco. Theretofore no mention had been made of the fact that the writer had been comparing the ability of the two groups, but on this occasion attention was called to the matter. The men were informed that in the opinion of the writer the smokers would not be able to endure with the non-smokers over the veritable wash-board of mountains marking the path of the return trip. At first the smokers did not seem to take the matter seriously, but after some discussion among themselves they resolutely announced their acceptance of what was in reality a challenge of their physical manhood.

"Throughout the day remarks were frequently made of the coming contest, for which every man appeared eager. About three hours before sunset the homeward trip of some ten miles across the mountains was begun. For two or three miles the men remained side by side. On one occasion when a short stop for 'wind' was made the smokers tauntingly remarked that during the next 'heat' they were going to sprint ahead and leave the non-smokers in their 'dust.' But when the next rest came several of the smokers had fallen behind and did not catch up before the party was off again. Then came the real test of endurance; the country changed from rolling hills to a series of long, steep, jagged mountains, alternating with sharp canyons. The full seriousness of the test seemed to be borne by every man. Conversation ceased, all available energy apparently being conserved for the physical demands of the moment.

"The result of the day's trip revealed

nothing unusual. That night as the first squad, consisting of eight men, climbed through the campus fence, the writer asked as to how many used tobacco. Seven were complete abstainers and the remaining one said that he probably smoked an average of one cigar per week. The individuals who immediately followed were practically all non-smokers, and as usual those in the rear were smokers.

"Of recent years the writer has had a wide variety of experience with various groups of college men engaged in geological field work, and in every instance, where intense physical activity has been brought into play, the smokers have shown their inferiority. Furthermore, the matter has become so well established in the mind of the writer, that no surprise whatever is occasioned when the smokers begin to lag, in fact it is expected that they will do so.

"The reason for this inferior physical activity is without doubt at least two-fold. In the first place the narcotic effect of tobacco actually reduces desire for activity, and in the second place actually destroys ability. Experience has overwhelmingly convinced the writer that smokers have far less desire for physical activity than have non-smokers and that they are far less able to indulge in it.

"Readers of the foregoing brief statement may recall some instance in which a smoker has shown greater endurance or strength than a non-smoker, and, in consequence, may feel that there is good reason for differing with the writer's conclusion as stated in the next preceding paragraph. It is important to bear in mind, however, that in such a matter as this, conclusions should never be drawn when but few individuals are engaged. In order to obtain reliable results large numbers must be involved. It is here pertinent to note that no case has ever been reported in which a large group of smokers has shown greater physical endurance than a similar group of non-smokers, while the reverse of this everywhere holds.

"Physical inferiority among tobacco users has now become so well known that they themselves commonly admit it, but they try to avoid the personal application of a general truth by asserting that many individuals are immune to its poisonous action. They argue that while certain individuals with weak constitutions may suffer from the use of tobacco, others more robustly built are not adversely affected by it, and, strangely enough, such defenders almost invariably consider that they themselves belong to the exempted class. As a matter of fact, it seems to be very difficult for a smoker to believe that he himself is seriously handicapped by the habit. Young smokers very commonly resent any imputation of their physical deficiency, and even after absolute demonstration is made are slow to accept the facts.

"The point of vital importance in this immediate connection, however, is: 'Are the deleterious effects of tobacco upon men limited to the physically weak and to others of special idiosyncrasy, or do the effects reach out to every individual no matter how robust he may be?' For the purpose of ascertaining facts bearing upon this matter the present writer recently collected data from a large number of athletic coaches relative to the physical condition of football men, both smokers and non-smokers. The results thus collected from American universities show that smoking is associated with an average reduction in lung capacity amounting to 9.2%. Inferiority is shown not only in the average of all institutions reporting but also in those of every team. The full significance of these facts can properly be estimated only when it is borne in mind that the men here involved represent our extreme height of physical perfection. When tobacco robs our most robust men of practically ten per cent of their lung capacity, there can be no question of its ill effects upon all others.

"Athlete coaches universally prohibit the use of tobacco to all men in training, and the men themselves not only readily accede to the regulations but they admit the wisdom of such. One of the least understandable things in this connection is that an athlete who is fully acquainted with the necessity of abstaining from tobacco while in training, should permit himself to return to it after the season is over. The fact certainly holds that if tobacco is bad for an athlete while in training it is equally bad for him while out of training.

"The effects of tobacco do not strike alone at physical efficiency. It has become a demonstrated fact that its use in institutions of learning is everywhere accompanied by low scholarship. The results are the same in the grades, in the high schools and in the colleges. Literally scores of investigations in various sections of the country have failed to report a single exception.

"The scholastic standing of smokers, as revealed by examinations of college and university records, averages close to ten per cent below that of non-smokers. At first thought it may appear that this inferiority is not sufficient to count for much in the matter of success or failure. It cannot be stated too positively, however, that in these days of close competition, the great bulk of mankind are making or losing on margins much smaller than this. An individual who today can make a mouse-trap or an ocean-liner a few per cent better than his closest competitor is assured of success.

"Tobacco is now being condemned from a wide variety of sources. Manufacturers are coming to believe that men who use tobacco, especially in the form of cigarettes, are not as proficient as those who abstain. Bankers regard cigarettes as undesirable, largely because of their reduced moral and social sense. Educators everywhere report low scholarship as a close associate of the habit. Juvenile court officials are almost a unit in the belief that tobacco is a strongly contributive factor in juvenile delinquency. Merchants discriminate against cigarette smokers in the employment of boys and young men for responsible positions. Many physicians and hospital surgeons are disclaiming against the use of tobacco, especially in the form of cigarettes, largely because of the damaging effect it exerts on practically every vital organ of the body. And then the masses are condemning it because of the pronounced impairment of the social sense in a large majority of those who use it. There are, of course, a great many excellent men who have not as yet aligned themselves against the tobacco evil, yet during the past few years their number has very materially decreased.

"It is of course apparent that many men who use tobacco have made remarkable success even under its handicap, yet it cannot be doubted that their work would have been much easier, happier and more effective without it. Such men seem to have been successful not because of it, but in spite of it."

# How Prisoners Are Fed in China

The Chinaman is, like the Japanese, a good imitator. When he follows right models he often excels the original.

Through the courtesy of Mrs. Dr. Lowry, a recent visitor at the Battle Creek Sanitarium, we are able to give our readers the following account of the feeding and general care of prisoners in China:

"The food looked very good. They have everything on scientific lines. If a man is at hard labor outside, he has a very large amount of rice and a bowl of vegetables. If on lighter work, he has less food; if he is lazy, he is given less food and lighter-weight bedding. They have two meals of rice and vegetables, and one of porridge every day the year round, and meat only at New Year's.

"They have a big bathroom with a bathing tank of cement, and are obliged to bathe every week in winter and three times a week in summer. They have long rooms in corridors with about forty white enamel wash basins, all immaculately clean, where they wash mornings and evenings.

"Their heads are shaved and their hair is kept about one-quarter of an inch long. They are clothed in light gray wadded garments, all immaculately clean. When they come in, if they have been following a good trade, and it is suitable for their health, they are allowed to work at it. If not, they are allowed a choice of trades, so long as it is suitable for their health. They are not allowed to pursue any of the small trades by which it is impossible to make a respectable living.

"The younger men have three hours schooling in the morning and the others as thought best, according to a system. Every Sunday morning forty of them are taken to a lecture hall on the second story, from which the surrounding country can be seen, and given lectures on morals, right living and hygiene.

"The lecture hall is most peculiarly arranged. The seats are arranged on an incline with very high backs and sides, so that the prisoners can see neither from the back or sides, and can only just see over to look at the speaker on an elevated platform. On the wall just about this elevated platform are pictures painted by one of the prisoners, of Mohammed, Jesus, Confucius and Buddha. The picture of Jesus is very disagreeable. He is represented as cross-eyed with a very heavy nose and mouth. The effect is horrible. Two asked if this was the rogues' gallery before they knew what the pictures were intended to represent. It made one long for the Sistine Madonna, Hoffman's Christ in the Temple, and the more mature Hoffman's Christ.

"They have a room that is lined with small drawers. Each drawer contains the record of a prisoner, with his prison number outside. An Austrian system is used for record of identification,—just one finger print. They formerly used the Bertillon French system, but prefer the Austrian system, although they have all appliances for both. They have a storehouse where all the prisoners' possessions which they have on when arrested are labeled and kept for them until they go away.

"There are two cells for prisoners, with cells opposite, across a narrow hall, for the families of prisoners. Here a prisoner's family may visit him each month for half an hour. If a prisoner is very good, he may see his family three times a month; if better than ordinary, twice a month; but no matter how wicked, once a month.

"There is a hospital with a clinic room, contagious wards, solitary rooms for very sick patients, and wards for three patients. Very few were ill. The doctor is a graduate of the Government school. If a man is sentenced for life, and behaves himself honorably for ten years, he is paroled. When a man is paroled, all the prisoners are brought into court and the man is paroled in the presence of them all.

"None of the prisoners have tried to get away. All look clean and well, and many seem very contented. The warden said the idea was to give them a chance for education, to teach them to be clean, to feed and clothe them properly, to give them plenty of fresh air, to teach them a trade by which they could honorably earn a living, and to give them higher ideals, many being poor and never having had a chance.

"As soon as a man learns a trade and does it well, he is paid wages which are saved for him, and either given to him when paroled, or partly given to his family and partly saved for him. They all have a drill every day in the open air, a sort of setting-up drill. Everything is well ventilated. When we went in the guard room it was a little close, and the warden ordered the windows opened.

"Just before we left, the warden showed

us the big executioner's knives, a certain kind for a general, a certain kind for other ranks; also the knives for different executions, disemboweling, slicing, chopping, etc., and then he said, 'That is all past now,' and we did feel thankful that so much light has shown itself in China that all those horrible, horrible methods are done away."

# The Physical Degeneracy of Modern Man

Professor Madison Grant, in his remarkable work, "The Passing of the Great Race," presents proof of the physical degeneracy of the human race within the last 25,000 years. According to this eminent anthropologist, the Cro-Magnon race, which occupied Europe in prehistoric times, in general, closely resembled the modern inhabitants of this part of the globe. This learned author tells us that:

"It is quite astonishing to find that the predominant race in Europe 25,000 years ago or more, was not only much taller, but had an absolute cranial capacity in excess of the average of the present population. The low cranial average of existing populations in Europe can be best explained by the presence of large numbers of individuals of inferior mentality. These defectives have been carefully preserved by modern charity, whereas in the savage state of society the backward members are allowed to perish and the race is carried on by the vigorous and not by the weaklings.

"The high brain capacity of the Cro-Magnons is paralleled by that of the ancient Greeks, who in a single century gave to the world out of their small population very much more genius than all the other races of mankind have since succeeded in producing in a similar length of time. Athens, between 530 and 430 B. C., had an average population of about 90,000 freemen, and yet from these small numbers there were born no less than fourteen geniuses of the very highest rank. This would indicate a general intellectual status as much above that of the Anglo-Saxons as the latter are above the negroes. The existence at these early dates of a very high cranial capacity and its later decline shows that there is no upward tendency inherent in mankind of sufficient strength to overcome obstacles placed in its way by stupid social customs.

"All historians are familiar with the phenomenon of a rise and decline in civilization such as has occurred time and again in the history of the world, but we have here in the disappearance of the Cro-Magnon race the earliest example of the replacement of a very superior race by an inferior one. There is great danger of a similar replacement of a higher by a lower type here in America, unless the native American uses his superior intelligence to protect himself and his children from competition with intrusive peoples drained from the lowest races of Eastern Europe and Western Asia.

"While the skull of the Cro-Magnon was long, the cheek bones were very broad, and this combination of broad face with long skull constitutes a peculiar disharmonic type which occurs today only among the very highly specialized Esquimaux and one or two other unimportant groups.

"Skulls of this particular type, however, are found in small numbers among existing populations in central France, precisely in the district where the fossil remains of this race were first discovered. These isolated Frenchmen probably represent the last lingering remnant of this splendid race of hunting savages."

# Department of Eugenics

**Conducted by Reynold A. Spaeth, Ph. D.**
Associate in Physiological Hygiene, School of Hygiene and Public Health,
Johns Hopkins University

# Wanted: A Sane Immigration Policy

It almost looks as though our great immigration problem was solving itself. For years a large number of well-informed persons who have the good of the American people at heart have been urging restriction of the tremendous volume of immigrants that pour into this country every year. During the war, immigration naturally fell off; so did emigration and all civilian travel. But it was expected that as soon as ocean travel was possible and safe, immigration would set in again and that the United States would immediately be flooded with all the thousands who have been straining at the leash to reach us during the war. But these fond or gloomy (depending upon the point of view) expectations are far from being realized. The far-famed "melting pot" appears to be boiling over, for the first time in its history. The figures given out by the Immigration Bureau show that, month by month, in 1919, a larger number of aliens is leaving the shores of the United States than is being admitted. Although the cost of steerage passage to France and Italy has risen to $65-$75—the cabin rate before the war—the flood of emigrants of all nationalities, returning from the land of liberty to their native shores, continues unabated. From the port of New York City alone, the figures for arrivals and departures of aliens for August and September are as follows:

| | Immigrants Admitted | Emigrants Departed |
|---|---|---|
| August .............. | 4,782 | 25,730 |
| September ........... | 10,182 | 22,920 |

Comparative scarcity of ships, delays in starting due to strikes, coal shortage, etc., and the unwonted rush for steerage accommodations result in tremendous congestion at the points of embarkation. Last July it was estimated that as many as 1,200 aliens were leaving New York each day. The third class accommodations, especially of Mediterranean vessels, continue to be jammed and the waiting lists to number approximately 2,500 persons. The Customs House authorities have never been so busy. The work of stamping passports, collecting an "income tax" from those with earnings over $1,000 and generally keeping track of the details of the exodus has made a large increase in the number of clerks necessary. Fourteen months ago six clerks easily handled everything—now there are seventy-five, and the Customs Intelligence Bureau, room 129, is thronged all day, while hundreds stand in line at Bowling Green.

Will this rush continue, and what will be the result if it does? Is it merely a temporary matter, a momentary stampede on the part of the people who have been kept from returning to visit their homes during the war? Will they return to the United States after they have experienced the conditions of shortage of food and materials, with corresponding high prices, that are said to prevail in southern and eastern Europe? Or are they through with America forever?

An illuminating bit of reviewing was done during the early days of the steel strike by a newspaper reporter. So many of the steel strikers were departing for home that the labor journals tried to persuade them to stay and see it through. A great deal of stress was put on the price of cows, ploughs and other necessities of farming life in Southern Europe—but still the strikers trooped away, the money that they had accumulated by hard toil and low living safe in their belts. Why stay? They couldn't understand the language nor the customs of this strange land. One lot of Americans told them to quit work and they would get more pay; they instructed them to march down the middle of the street in a body carrying banners. Thereupon another lot of Americans rushed at them and beat them over the head with clubs. Very confusing. They were determined to take a chance on the thousand dollar cows that at least understood their language.

## Renewed Immigration Expected

From month to month the turning of the tide has been expected. It may come at any moment; and it is with this turn, the renewed influx of immigrants of all classes, races and sexes that we are here concerned. Much speculation has been given within the last few years as to the immigration policy that the United States should adopt. From our point of view, the formulation of a policy consistent with the progress of the race—the eliminatinon of defective strains and the raising of living conditions—is all important. It has long been recognized that, in the interests of the portion of the population that does the nation's work and bears its economic and social burdens, the original idea of the wide-open door is short-sighted. It is a glorious and sentimental thought—to welcome freely to the "Land of Liberty" all the oppressed, downtrodden and destitute of other lands. But the order was found to be impossibly large. During the 18th and 19th centuries, all the prosperous European countries attempted to improve their racial stocks through a process of "dumping" undesirables. Convicts, "black sheep," economic failures and anti-social individuals generally, were sent, frequently at government expense, to the colonies. Portions of Africa are still used in this way, as penal colonies. The United States was also utilized for this purpose until it became imperative for America to defend herself from the dumping process. Accordingly, laws were passed restricting admission to the country to persons who were judged not to come under any one of twenty-one different classes of undesirables.

With the increasing flood of immigrants, the Bureau of Immigration increased the number of "ports of entry" and their staffs of inspectors and medical officers, and attempted painstakingly to enforce the laws barring admission to persons with communicable or filthy diseases, to the insane and feeble-minded, paupers, criminals, etc. The results, however, show how far achievment falls short of intention. Our seaboard asylums and state institutions, particularly in the east, have shown a steady and alarming increase in the proportion of aliens admitted from year to year. S. L. Davies, Commissioner for the Alien Insane, said in 1910: "If the increase in the percentage of the foreign born be continued at the present rate for about ten years longer, the foreign-born admissions will equal the native born." And the congestion in the poorer districts of our great cities shows an ever-growing unassimilated mass of aliens, living in racial groups, unable often to speak English, living miserably from hand to mouth often amid unspeakably unhygienic conditions, the great source of supply to our charitable institutions, hospitals and insane asylums.

## Congestion at Ports of Entry

Too much reliance has been put on the melting-pot idea. It cannot be expected to solve our problems so simply. To carry out the figure—dregs form too fast and the ladling-out process has not, could not, keep up with the preposterous pell-mell, piling in of all sorts of ingredients. In the six years ending June 30, 1914, a total of 7,544,452 immigrants landed in the United States. They were of every race, color, creed, age and sex,—for even the Chinese Exclusion act has necessarily many exceptions and the "gentlemen's agreement" between the United States and Japan can not, in its nature, be absolutely water tight.

One rather interesting corollary to the Japanese agreement is the institution of "photograph" or "proxy brides," as they are called. When the pact was made, exception was granted in favor of the wives of Japanese laborers already domiciled in the United States. Many Japanese naturally took advantage of the clause and procured for themselves wives of their own race by a form of marriage by proxy, performed in Japan without involving the attendance of the bridegroom. The Japanese wedding ceremony appears to be extremely simple. The woman's name is removed from the district register where she lives and affixed to the register in the district where the prospective husband's family live. This simple rite over, the woman becomes the legal wife of the Japanese in America and as such is entitled to her passport to join him. 60,033 of these "photo" brides have landed in San Francisco in the past ten years.

Before the war there were over 173 lines of immigrant travel to the United States. In rush seasons, as many as 4,000 aliens a day arrived at Ellis Island alone. Imagine the work of sifting out those who should be debarred from such a never-ending motley crowd. Many are turned back; in 1914 out of 1,485,957 immigrants who arrived, 41,250 were certified for different causes and prevented from entering the country. Of these 3,051 were debarred for trachoma alone, 1,217 for venereal diseases, and 1,360 for mental deficiency of varying degree. External evidences of disease and general unfitness are looked for first in a hasty glance. Those who appear suspicious are marked with chalk on sleeve or shawl and segregated for further inspection. Evidences of trachoma, a highly infectious and dangerous disease of the eyes, is carefully sought for; every eyelid of the whole 4,000 is turned back and examined. Certain obvious signs of venereal disease, hook-worm, degeneracy, etc., are fairly easily detected. The amount of money that each immigrant is bringing in with him is ascertained, together with information as to relatives or friends already in the country who can help him get work, if he seems poorly equipped. A search is made for prostitutes and procurers, and every year an insignificant few hundreds out of the thousands that get by are stopped and deported. The discretion of the inspectors must be the judge as to whether X, Y, and Z can probably get along on what they have until they find work, and whether they and their families are "likely to become a public charge." But how can they be sure whether X has had an attack of insanity or not? (Anyone who has had two attacks of insanity is very rightly barred, but immigrants do not bring clinical "histories" with them.) Or whether Z's wife is merely stupified, stupid, or feebleminded? Obviously, they cannot. The congestion is too great for prolonged cogitation over borderline cases; and frequently the pressure and insistence of relatives, friends, or future employers, make the conscientious official's life a burden. The law now reads that chronic alcoholics and persons of "inferior psychopathic constitution" are to be excluded. Some of the former may be distinguishable, certainly by no means all, and the latter class—one wonders in what manner the gentlemen who added that clause to the immigration laws thought it could be applied.

## The Plea for Restriction

The great obstacle that stands in the way of all restriction plans is the cry that goes up from employers all over the country for more and more cheap, unskilled abor. For many years the Committee on Immigration of the Eugenics Section of the American Genetics Association has been urging the necessity for restricting the influx of just this type of immigrant. The argument put forward by the committee seems to us unanswerable,—that it is the ignorant common laborer who is most at the mercy of our complex industrial conditions and is most apt to go down in the labor turnover and succumb to the diseases, both mental and physical, that make our congested city districts an increasing menace to the community as a whole. To many people who did not grasp its full significance, the "literary test" that was finally passed by Congress last year after it had been vetoed by three presidents —Cleveland, Taft, and Wilson—seemed an arbitrary discrimination against peasants and workmen who had not had the opportunity of education. That the clause was discriminatory and that it would undoubtedly work hardship in certain individual cases was not denied, but the aim of the clause was to prevent to some extent the herding into this country of ignorant workmen for the purposes of exploitation. Better for them that they should stay on their small farms or work at their trades in their own country than that they should be rounded up like cattle by steamship agents with fair promises.

In spite of laws passed against the admission of so-called "conscript" labor, the steamship companies sent their agents into the small towns and villages of Eastern and Southern Europe. Placards showing the idyllic conditions of work and life in America were conspicuously displayed. The steamship companies in some cases paid so much a head for every immigrant induced to go. Their small savings and mortgaged farms went into the passage across, and they were delivered helpless into the hands of their future employers and masters. Probably very few people realize to what extent the ignorant foreign workman, especially if he be illiterate, is actually without resource or redress, once he is "nailed" by the steamship agents. The system in the past has amounted to a human traffic of which Americans cannot be proud. It has become the fashion recently to blame all labor upheavals to the "inflammable foreign workmen." And yet it is those great interests in the country who employ large numbers of foreigners for unskilled processes who manifest the greatest concern over the present excessive emigration of workmen and who have in the past consistently fought attempts to restrict their admission. A fine of $200 is now collected from the steamship line that brings over an immigrant of one of the excluded classes. The company must also return all such immigrants to their native countries, giving them the same accommodations on the return trip that they paid for upon coming over. But even this severe measure has not sufficed to diminish the number of defectives and diseased persons who slip through the ports of entry, particularly during the crowded season.

## Dangers of Post-War Immigration

Many authorities believe that post-war immigration is extremely likely to be heavy and to include a serious proportion of undesirable elements. A bill, known as the Burnett bill, is now under consideration, which will restrict all immigration for four years after the war. The fear behind this drastic legislative suggestion—and that may assist in causing it to be passed by Congress—is probably largely political. Radicals, anarchists, Bolshevists, are supposed to be planning to come to the United States in large numbers in their next spare moment, with the avowed intention of overthrowing our Government. Perhaps they are. If so, it would be wise to keep them out, and our present laws that deny admission to anarchists but supply no acid test whereby the immigration officials can unfailingly pick them out, are obviously inadequate. But a still greater reason for advocating a temporary wholesale restriction of immigration is the realization that America needs a longer respite to assimilate the conflicting human material that is already here. Moreover, the fear of eugenists that the foreign arrivals of the next few years are likely to include a large proportion of the "backwash" of the war is based on excellent evidence. An unusually large field for labor now exists in Europe. Reconstruction is well under way in many European countries and the pick of the labor market is likely to be absorbed at home. Those who are too feeble, worn out and devitalized by their harrowing war experiences are most likely to come here in search of the "easy money" and prosperity in the American El Dorado of their dreams. Among these unfortunates are sure to be many of those whose nerves and constitutions have been hopelessly shattered by their experiences of the last five years. It seems cold-blooded, almost brutal, to bar them out for faults not their own. And yet we cannot be governed by sentiment in a matter of such importance to equally guiltless present and future Americans. It is they who will bear the burden, while we get the credit of any foolish and shortsighted attempt to be "unselfish" in our policy. The danger of the spread of tuberculosis and venereal diseases is greater now than ever. Cases of strange forms of intestinal infection, unknown in America until the soldiers began bringing back the parasites, are already appearing in all classes of the population, to the bewilderment of practising physicians; they have had no experience with them and do not know how to treat them. Altogether, the burden of discrimination and weeding out—never light—that will fall upon our immigration officials and inspectors, if immigration again goes unchecked, will be greater than any body of men can be expected to bear.

## Labor Supply and Eugenics

The question of the labor supply touches Eugenics in so far as it affects the mental and physical environment of large numbers of present and future generations of Americans. Professor Don Lescohier, professor of Americanization in the University of Wisconsin, in the *Atlantic Monthly* for April, points out very clearly the relation between labor scarcity and the possibility of proper living conditions for the great mass of the laboring population. According to Professor Lescohier, there is no danger, whatever, of an actual labor shortage. Even during the war, when there was shortage of labor in one place, there was unemployment in another. There are rarely fewer than a million jobless in the country, and in times of peace and prosperity, the number may reach five millions. Labor shortage and over-supply appear hand in hand at all times, and the need is not for a "labor reserve"—a continual mob of men and women out of work from whom the employers can select at their leisure—but for greater economy and conservation of the labor supply at hand. The extension of the war-time United States Employment Service as an industrial concern might be helpful, but one of the most important factors is the elimination of the present system of a wastefully large labor turnover. As eugenists we must feel the truth of Professor Lescohier's arraignment of the attitude toward labor as a commodity, a factor in production, not as human beings,—citizens, husbands and fathers. To the business interests the policy of a labor reserve is on the same footing with a land or capital reserve. "But," says Dr. Lescohier, "to one who thinks of labor in terms of personalities, the idea of a labor reserve looks entirely different. To him a labor reserve means fathers out of employment, children underfed, sick mothers without medical attention, increased infant mortality, families in debt, the coal bin empty, the landlord threatening eviction." Of four prime causes contributing to the maintenance of the labor reserve, first place is given to a "fluctuating but unceasing flow of immigrant labor."

Professor Lescohier thinks immigration will decrease after the war; and he believes that even if it should cease entirely for ten years, the industrial development of the country would not be retarded. We cannot but believe that he is right. The plea that has so long drowned out the urgings of eugenists for shutting down at least temporarily on immigration, falls to the ground. The prosperity of the country will not suffer by an intelligent conservation of the existing labor supply; on the other hand, it must benefit by any measures that raise the efficiency, wages, health and intelligence of employees. And certainly it will be a great relief to let the long-suffering melting-pot simmer for some time without adding to its present contents.

# Heredity in Fiction

Heredity is no longer a "theory" or doctrine held by scientists alone. It has entered into the lives and beliefs of people everywhere and is inevitably so presented in literature. We find in present-day fiction the conviction of the inheritance of traits and characteristics appearing in every possible form, from the animal stories of dogs harking back to their wolf ancestors to the more mystic conception of the passions of past lives influencing present generations and reaching out beyond them into the future.

In "Mary Oliver," an English novel by Miss May Sinclair, the author has attempted to give in the minutest detail all the background, both hereditary and environmental, that makes the life of her heroine what it is. It seems a very dull and monotonous life, hardly worth the telling for the things that happen. The interest of it lies almost entirely in the showing-up of the actions and re-actions of one generation on another and of the direct influence of different members of Mary Oliver's family on each other. It is all very much like real life;—perhaps that is why it is both dull and fascinating. Various ordinary people are presented who do ordinary things, drink a great deal of tea (the scene is laid in England and Wales) and make ordinary remarks.

And then we are shown what in movie parlance is called a "close-up" of these same people in their intimate family life. There they emerge as individuals, mostly a bit "queer"; a grasping, jealous, rather unpleasant father given to too much drinking; a beautiful, clinging mother who absorbs the affections of the whole family to such an extent that they are helplessly dominated and impeded by her soft, permeating, futile personality; three boys and the girl Mary Oliver—all caught in the net of family influences, hereditary and environmental, and each struggling in his or her own way to be free and to live some sort of individual life. The hereditary influences are carefully portrayed in the father's bachelor brother and his two maiden sisters, the two latter both thwarted and dominated by their brothers, neither able to free herself from the family authority and an overpowering family gloom. One of them goes mad and the reader is led to believe that insanity is hereditary in the family. That is supposed to be the reason that the bachelor brother very eugenically and heroically refrained from marrying. But in the first place, this brother is also said to have been deeply in love with Mary Oliver's mother, who was won by the more virile, selfish and uneugenically minded brother; and in the second place, the poor maiden aunt who goes insane had also had a thwarted love affair and her madness took the form of a belief that she got a glimpse of. We might add a third place—that the other maiden aunt apparently of good mentality though of weak will, is adjudged by both brothers and indeed by all her kin to be quite abnormal because she insists upon joining the Unitarian church!

The maternal heredity is not given, but the mother is pictured as a conventional, emotional, pretty creature with a not high type of mentality. None of Mary Oliver's generation marry, at least during the story. Two of the boys die young of heart trouble, and the third who, like his father, craves alcohol, emigrates to Canada very suddenly. There we cannot but hope that, freed from the thwarting, suppressing influences of his family, and the insidious, absorbing sensuousness of his mother, "Dan" found a bracing, sturdier atmosphere in which to develop.

Mary Oliver, the youngest of the family and not particularly welcomed by it as a mere girl, appears as the focus of all these family forces, and she gains her freedom in a peculiar fashion. While remaining more bound, externally, especially by her mother, than all the rest, she attains freedom of intellect and emotion while apparently doing nothing but reading philosophy and poetry and writing poems and translating Greek secretly. Like her brothers, she doesn't marry, although for a short week she becomes the mistress of a man of letters in London. Her freedom, or her "happiness" as she always calls it, is an artistic experience, an ecstatic enjoyment of beauty, whether of nature or literature; and the pursuit of that happiness, the ability to find it and make it her own in the midst of family jealousies, personal thwartings, duties and even the semi-ostracism that follows her escapade in London, is her achievement in life.

While Miss Sinclair has succeeded unusually well in keeping her own judgments and views of her characters in the background, one cannot help feeling that a certain point of view is presented through the medium of the story. Implicitly, at least, heredity is blamed for almost everything that happens or doesn't happen in the family. The hereditary insanity taint, embodied in unfortunate, mad "Aunt Charlotte" as a terrible example, looms large in almost every individual crisis. And yet, one feels that this is overdone. Mary and her brothers give no strong indications of inherent abnormality. While the Oliver family undoubtedly has a neurotic taint on the father's side, that alone would not account for the blasted lives of the children. We have here it seems to us, rather a case of "social inheritance." Certain religious ideas,—taboos and outworn conventions of thought have been handed down in this narrow little English community for generations, until they have come to be instruments of tyranny. They were undoubtedly natural and real to earlier generations, but they have become now merely a means of exercising restraint and repression by the stronger individuals on the others in their own generation, and then by the older upon the younger generation. This is a kind of inheritance that is very real and very significant. The struggles of the individual either to fit himself into, or to break his way out of, an inherited social environment are often confused, as we think they may be in "Mary Oliver"—with the less hopeful struggles of an individual with the strengths and weaknesses that are inherently a part of him, his inherited germinal constitution. We cannot but believe that if the difference between the two kinds of evolutionary progress were better understood we should have fewer hopelessly morbid family groups both in fact and in fiction. Much precious energy is wasted in bemoaning a fate imagined to be inevitable, that might profitably be diverted into analyzing and coping with it.

# Department of Physical Education

**Conducted by C. WARD CRAMPTON, M. D.**

Director of the Department of Physical Education, New York City Public Schools, and
Dean of the NORMAL SCHOOL OF PHYSICAL EDUCATION, Battle Creek, Mich.

# Barnacles

The barnacle has no feet. For him life consists in sitting still. He attaches himself to wooden piles that stick up from oozy harbor bottoms. He also hangs to sides of ocean-going ships. He makes himself felt in both locations. In the first, he scratches swimmers' legs and in the second, he makes the steamship's coal purchasing agent tear his hair. He is an effective, quiet little animal. He makes his mark rooted to a pile or an iron plate. But he does not get anywhere. He lacks the power of locomotion.

Once upon a time, he was a free swimming, little animalcule, but he lost his swimmerets because he found that he could get everything that was coming to him by sitting still; so he has sat still for five hundred seventy-six million generations of barnacles more or less, and is—merely a barnacle.

This is what happens when people sit still. They lose the power of getting anywhere. Things may happen to them, but they do not make things happen. They become merely jelly-fish rooted to a desk, a room, a bed, an idea or a business, but they don't get anywhere.

The power of locomotion is directly proportioned to the general all-round wisdom and usefulness of the individual. The weasel has more merit than the snail.

Movement brings the individual in touch with a variety of experiences. Sitting still, he depends upon what may happen to pass by. Moving, he brings to himself one thing after another; comes in contact with one person after another, each of which makes an impression, causes a re-action and develops the soul, mind and body. He who sits still is the servant of circumstance.

Man is what he is today, the king of the animal kingdom, because he has had so many ways of getting about. For a million years he could run, jump, climb, swim, paddle and row. Then he made other animals his servants to carry him. He has harnessed steam, electricity, and gasoline, and now he can fly. Moreover, he has learned to send his words on journeys by writing, telegraphing and telephoning. His mind can travel fast, far, and true.

He has developed his body, his mind, his spiritual influence and power, by movement. He is a complex psycho-motor machine developed by motion and for motion. When he fails to move he becomes rooted in one place. All of his racially earned powers die slow lingering deaths. This happens to individuals and it happens to races.

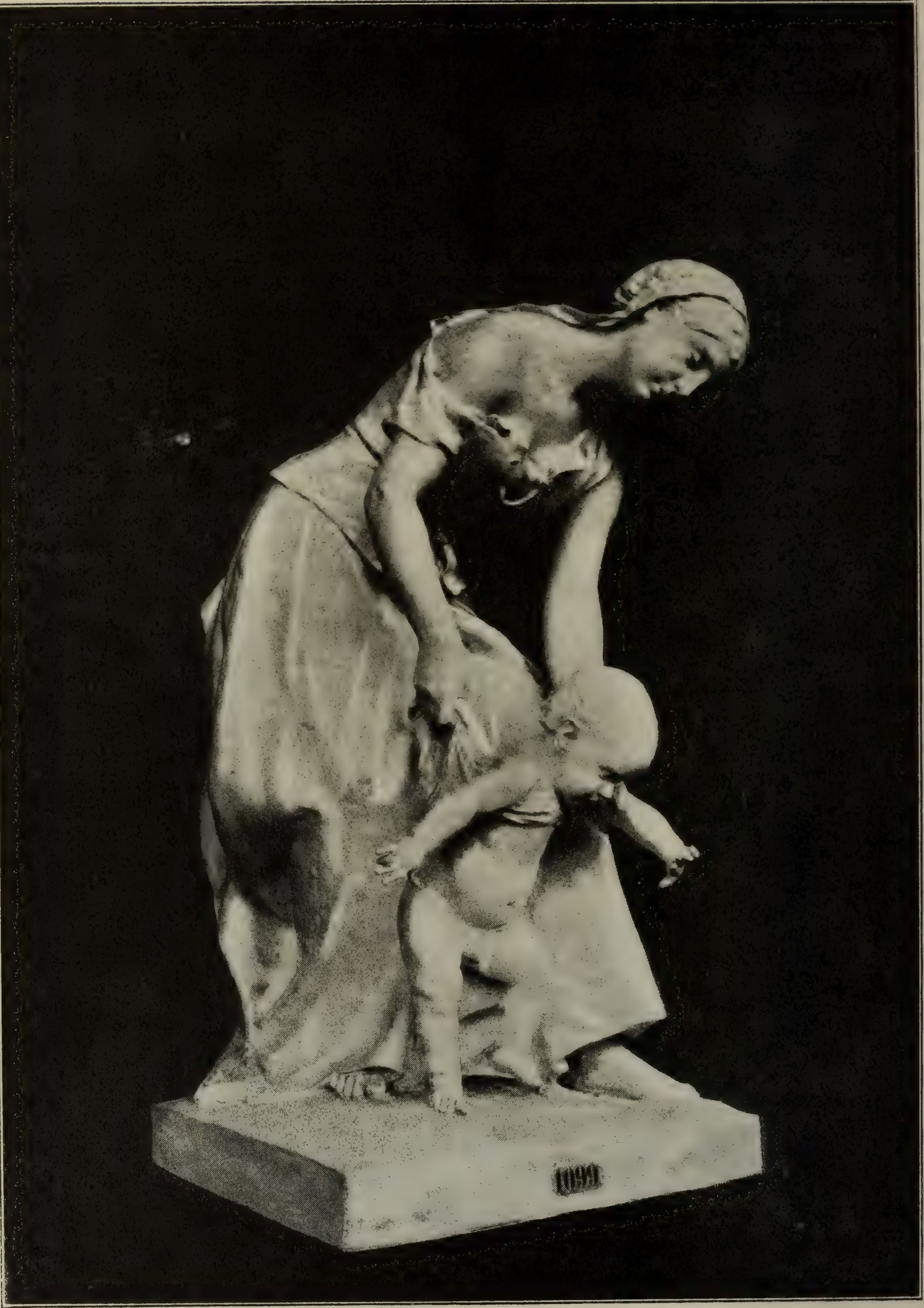
The babe is active in his cradle, as a run-about, a youth and a young man. As a father and a successful business man, he gets his feet into slippers, his knees under a flat top desk, his nose in a trade journal, his mind in a vise and one foot in the grave.

*Sitting, sick, dying, dead!*

The only way known to men and angels to keep alive, is to keep brisk and moving.

## The Best Exercise

How many thousand times a year physical directors are asked, "What is the best exercise?" and they answer according to



FIRST STEPS

their own particular interest and conviction, and these are as diverse as the exercises themselves. Boxing, running, wrestling, walking, fencing, baseball and golf all have their devotees, each with his convincing argument and enthusiasm. With so many opinions, it is difficult to find the truth.

From a philosophical standpoint, that exercise is best which is most normal to man. It is the exercise which has been his most accustomed response to environmental necessity. It is the exercise, therefore, to which he has become best adjusted, the exercise for which he has a hereditary exactly-working, muscular and bony mechanism actuated by a nervous system, adjusted through countless generations of habitual action.

The muscular movements which answer these criteria of the "best exercise" are those which have already become automatic and long since taken from conscious control. The beating of the heart is a perfect example. So necessary is it to life that life itself compels it. Breathing, the muscular movement which is only slightly less a critical essential to life, may be the next "best exercise." Less immediately important exercises are intrusted in part or wholly to human volition. But the one voluntary, muscular movement which is most habitual even to the point of being semi-automatic and thereby receiving the seal of hereditary approval, and the exercise which is most nearly a human necessity, is *Walking*.

Walking is the simplest form of satisfying the necessity of change of place. Without it there can be no successful struggle for existence. In the history of the race, the rising of man from all fours to his hind legs marked the beginning of the epoch in which the hands developed their skill and made him a civilized being. Walking differentiates man from the brute. To learn to walk is the baby's instinctive reaction to his surroundings. When he finds creeping too laborious and slow, when he puts himself upon his feet, he enters an ontogenetic era which is co-relative with the phylogenetic era in racial history. Mothers instinctively teach their children to walk, and the happy destination of the first successful journey is most frequently and appropriately the waiting hands of the father.

Walking is indeed a most natural exercise, one for which the body is framed and fitted and to which the race has been long habituated. As such, it deserves our respect, for it is only by the preservation of racially old movements, customs and human management in general, that the human race is to be preserved; and in these days when modern civilized man is trying to climb up a biologic ladder and pull the ladder up after him, they require our most careful consideration. The older racial activities give us the highest and most complete satisfaction. They fit upon the body, mind and spirit as old and comfortable shoes do upon the feet. This is the reason why men go fishing and hunting and why they like to hit a ball with a club. Happiness comes only from harmony with racial experience.

Walking—the race-old exercise, one of the great tokens of Health, Happiness and Efficiency—is the "best exercise."

## Walking

*Different kinds of Walking.* There are many different kinds of walking, from the slow saunter of Sunday afternoon to the racing six-thirty gait of the professional pedestrian. Each has its use and purpose. The slow quiet stroll with its background of ease and its accompaniment of interesting conversation is a real pleasure. In America, it is becoming extinct. People used to stroll home from church. Now they hurry home to dinner and on Sunday afternoon the automobile is requisitioned.

*Marching.* "Heel and toe" walking is properly called *Marching*. This has been studied by the armies of every nation since the time of Alexander. The classic description on marching is given in the Regulations of the United States Army, paragraph 62, Infantry Drill Regulations, page 27, now familiar to 4,000,000 young Americans.

## "Quick Time"

"62. Being at a halt, to march forward in quick time: 1. Forward. 2. March.

"At the command *forward,* shift the weight of the body to the right leg, left knee straight.

"At the command *march,* move the left foot smartly straight forward 30 inches from the right, sole near the ground, and plant it without shock; next, in like manner, advance the right foot and plant it as above; continue the march. The arms swing naturally. The cadence is at the rate of 120 steps to the minute."

This is marching. It is the military kind of walking primarily adopted for the purpose of parade. It was adopted, however, as the result of a long investigation of the proper length of a step and the most advantageous cadence, i. e., the number of steps taken per minute. For a man, vigorous and well-grown, and of the average height (five feet eight inches), the thirty-inch step to 120 beats a minute is the ideal. The taller the man, the longer will be his steps and the slower the rhythm. The short man naturally takes shorter steps and more of them.

There is something peculiarly satisfactory in the use of the standard rhythm and step. It is just slow enough to take the edge of hurry away from the mind and body and yet rapid enough to make progress. It is used in all Close Order Drill and parades and is well adapted to the purpose.

Many hundred thousands of our men have learned this rhythm and step for the first time and will never lose the value that they have gained. They remember the time when after hastily gathering accoutrements and dashing into formation, the command "Right by squads!", was given and they swung into rhythm of the United States Army with a buddy on either hand and a swaying mass of rifles, caps and packs ahead. The individual loses his identity

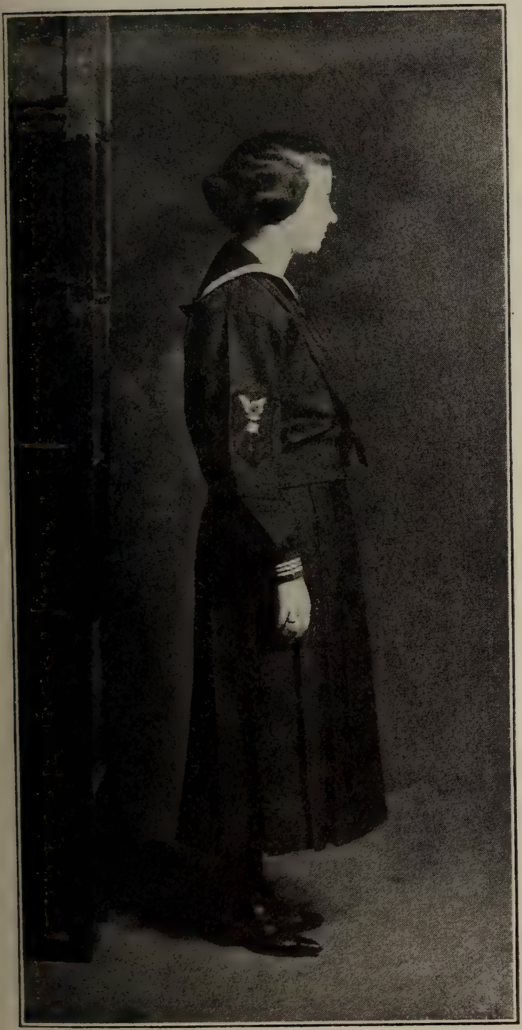
THE PARADE

and swings sturdily with the mass. Hearts beat in tune and the soul sways into the great soul of the regiment.

This is an experience never to be forgotten. It always leaves the soldier a new and bigger man, bigger by the wide-spread bounds of a four-million khaki-clad democracy. The swing and go of close order marching has given a fundamental physical experience in group action which no individualism can destroy. Men know what it is to work and feel together, and this is the basis of democracy.

Women too, have learned to march. To the observer who has watched the rise and organization of militant woman suffrage, it has seemed that not until women had given themselves sufficient training to organize and appear before the public in great parades, did the cause of woman suffrage prevail. It is undoubtedly true that by parades they learned more than they taught the public even by the great effect of the impressive spectacle of marching, organized womanhood.

Walking of this type is particularly help-



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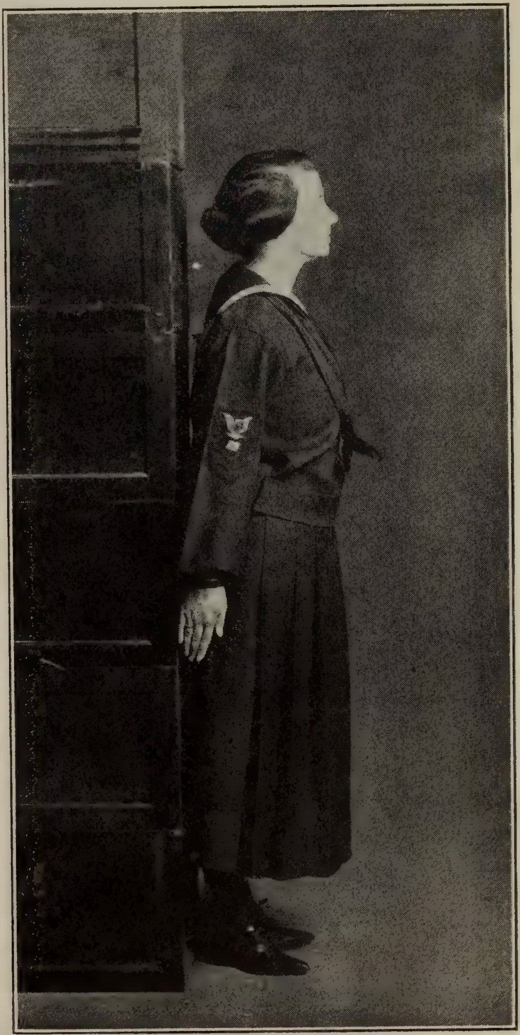
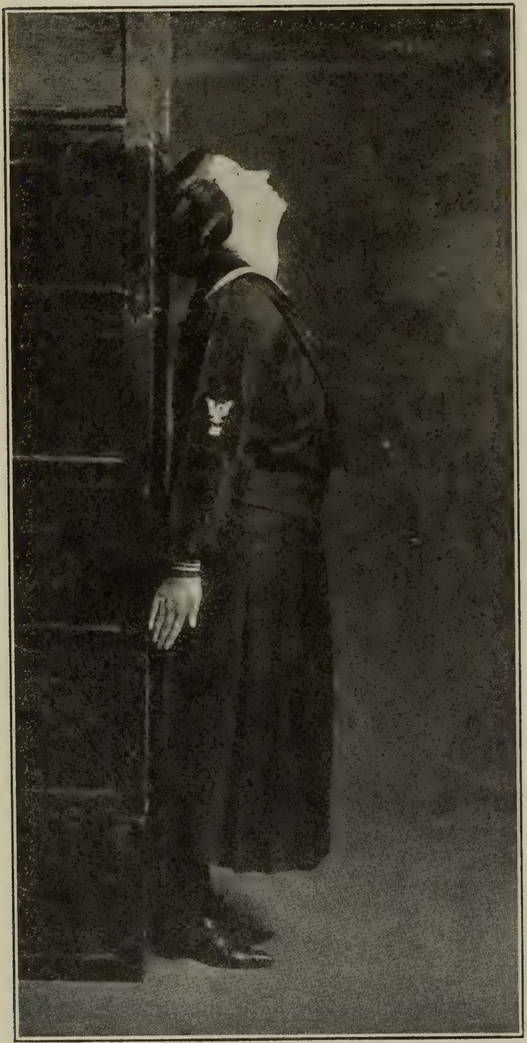


No. 2

ful in getting and maintaining good posture. It is important, however, to start right, to gain a feeling of the erect head and high chest. One of the most effective methods is that devised many years ago by Dr. J. H. Kellogg, Superintendent of the Battle Creek Sanitarium. This is based upon sound physiological and biological principles and makes use of what may be called a psycho-physical trick.

This is as follows: Stand with the back to a wall touch the finger tips to the wall and stretch them down as far as possible, bending the head back and looking upward. At the same time, endeavor to keep the shoulders flat on the wall. Raise the head to the normal and step forward.

Bending the head backward with the shoulders held close to the wall, raising the chest mechanically, makes use of the "tendon function" of the muscles. This again is reinforced by the stretching downward of the arms, which results in the chest being raised to antagonize the downward stretching of the arms. This is a



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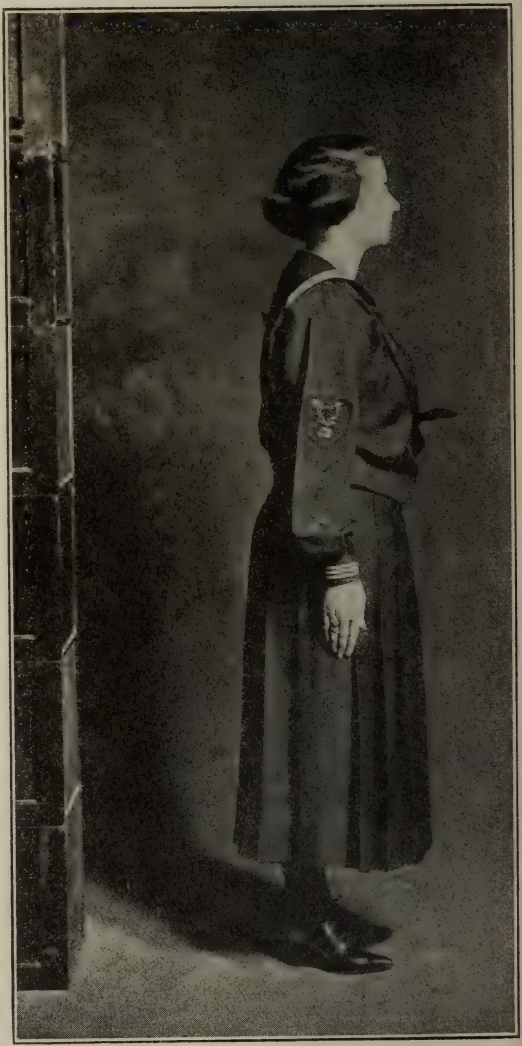

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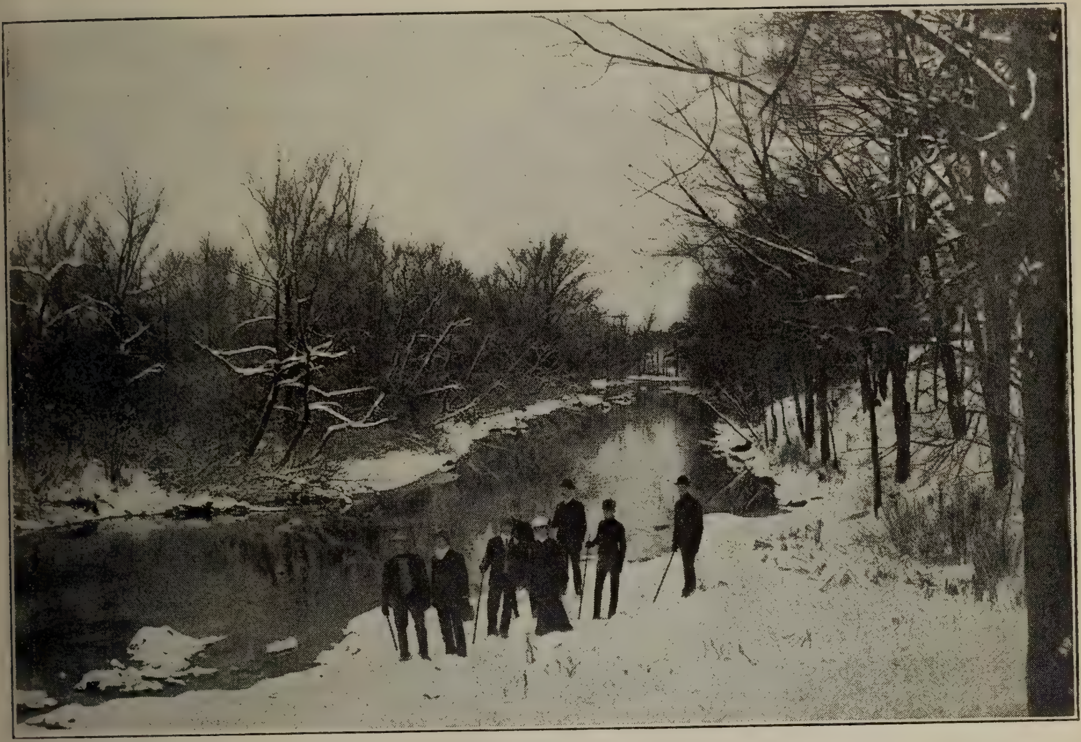

A Winter Walk

rapid and effective way of getting a good posture for the walk.

## Flat-Foot or Shuffle Walking

Marching is, however, not the oldest form of walking, but has been developed by civilization. The oldest form of walking is that which is now found among savage races. In America, the Indian and the negro, where they are under their original conditions, still use it. It is frequently used by "tramps" and convicts, where the veneer of civilization is stripped from the primal brute. This style of walking is not called "flat-foot" because it is conducive to flat foot or because the foot is planted flat on the ground instead of heel first. In fact, the toe usually touches the ground before the heel. There are other striking differences. In marching, the body is erect and the leg is straight as the foot leaves the ground and again as the foot strikes the ground in front. In Flat-Foot Walking the body is inclined a little forward, the knee is slightly bent both when the foot leaves the ground and when it returns to it. The movement is a glide rather than a walk. It is accomplished with less effort than marching. One can break from it into a trot by imperceptible gradations. From the march on the contrary one must "break" into a run. It is peculiarly suited to a roving out-of-door life, for the body is always under control, ready to respond to any quick emergencies requiring jumping, dodging, or running.

There are gradations in walking all the way between the typical marching on parade to the shuffling gait of the savage. When the soldier is really out for business and on his hike, his officer gives the command, "At ease," and with a sigh of relief, he changes his gait from the march, relaxes, and approaches the shuffle step of his ancestors; and the company presents a sharp contrast to its former trim appearance. This is the route step, where every man "gangs his ain gait." Occasionally, however, the officer brings them back to marching at attention and here again the change brings relief and the feeling of mass rhythm brings a feeling of comfort. If, however, the officer does not bring them back to mass movement, the soldiers soon commence to keep step again until a squad of even a whole platoon will be marching together just as if they were under strict orders.

At the end of the day on the "last long mile," when pack and rifle seem to weigh a ton, there is a universal leaning forward and the gait of the soldier becomes the most common gait known to man—the shuffle step.

## Racing

Every motor activity which has its fundamental in the life of man has become a mode of competition among men. The more closely related to survival, the more interest is taken in competition. This principle underlies baseball, boxing and fishing—walking is no exception. The fastest mile that has ever been walked is under six and one-half minutes; ten miles, close to an hour and a quarter; fifty miles, nine and one-half hours; one hundred miles in less than nineteen hours. Six day walking competitions have taken place and spectacular hikes have been made across the continent. During the last ten years, however, competitions in walking have materially decreased in popularity and are now seldom found on athletic club or college championship schedules. This is due to the fact that walking in competition for short distances is an entirely artificial mode of progression. It costs as much effort and energy to walk a mile as it does to run the same distance. but the running is very much quicker. When man wants to make speed, he runs and does not resort to the strained artificial gait of the athletic walker. This gait is like marching. The leg is straight as the foot leaves the ground and straight again as it is planted. By turning the hip forward as the leg is thrown forward, the stride is lengthened from two to three inches.

To compensate for this exaggerated movement of the hips, the trunk is twisted in the opposite direction and the balance is maintained by an exaggerated movement of the shoulders and arms. The whole movement is an almost grotesque picture of tremendous activity. One, two, and three mile walks are the severest of all athletic events and require long training.

These are the three main kinds of walking. There are, however countless variations, for every individual has a gait peculiar to himself, and moreover, it will vary as does his facial expression, his posture and his handwriting with his health, feelings and mood.

*(To be Continued)*

# Home Economics

Conducted by LENNA FRANCES COOPER, B. S.

Dean, School of Home Economics, Battle Creek Sanitarium

# What a Business Woman Should Eat

Business women can ill afford to disregard their own physical efficiency. As in fairy tales of old, when good health departs, the vision vanishes, and one no longer finds himself in an enviable position. Food is quite as important a factor in keepng the body in good fighting trim for the business world as it was in the preparation and maintenance of the army abroad. There are certain requirements which must be met by every human being if the body is to be maintained in a physically fit condition. The first is that there shall be a sufficient amount of food eaten to produce the amount of energy necessary to meet the demands of the occupation, just as an automobile must be supplied with enough gasoline to produce the energy required of it. This energy scientists express in terms of calories. It is used in the body in two ways, first for maintaining a constant body temperature of about 98°; secondly in providing the wherewithal to perform the bodily functions and whatever external work the mind dictates that the body shall perform. The quantity of food required for this purpose varies according to the size of the individual, and the amount of external work required of the body. For a woman, the amount required is usually between 1,600 and 3,000 calories, dependent largely upon her occupation. It is not practicable for a woman untrained in food calculations to attempt to compute her caloric ration daily. It is possible, however, for her to weigh herself frequently, keeping tab upon loss or gain in relation to her normal body weight. If there is a decided loss, and particularly, if this loss continues for some time, she may be convinced that she is consuming energy which has been stored in the form of bodily fat, because a sufficient amount is not being furnished by her daily food. In weighing, one should plan to do it at about the same time of day and under as nearly the same conditions as possible, otherwise there may be a variation of from one to two pounds, dependent upon whether the weight is taken before or after meals or whether one has recently partaken of a copious draught of water. The approximate normal weight can be obtained from the following table.

APPROXIMATE NORMAL WEIGHTS FOR WOMEN.

| Height in Inches | Weight in Pounds |
|---|---|
| 59 | 119 |
| 60 | 122 |
| 61 | 124 |
| 62 | 127 |
| 63 | 131 |
| 64 | 134 |
| 65 | 139 |
| 66 | 143 |
| 67 | 147 |
| 68 | 151 |
| 69 | 155 |
| 70 | 159 |

A constant decrease in body weight should be looked upon with much concern. If the weight is normal, from time to time, one may be convinced that his food is supplying a sufficient number of calories to meet the bodily requirements.

Another requirement which foods must fulfill is to furnish a sufficient amount of muscle-forming material for the repair of the muscular tissues, and this constituent scientists call "protein." This muscle former is especially abundant in lean meat, milk, eggs, nuts and the legumes, peas and beans. It is found to some extent in practically all foods. There is a difference, however, in the quality of this food constituent as found in various foods. Milk and eggs supply it in the very best form. A quart of milk will supply more than half of the amount needed for an entire daily ration; an egg supplies about one-fourth of the amount needed; a very small amount of meat will make up the required total. This however, is usually made up by the quantity distributed in breads, cereals, cheese and other foodstuffs. Indeed, one of the greatest errors in American dietaries is the excessive amount of protein, particularly in the form of meats, which are subject to putrefaction in the alimentary tract.

Still another matter of concern in planning the dietary is the quantity of mineral matter, that the body may be supplied with a sufficient amount of lime, phosphorus and iron, the lime and phosphorus being especially needed for the bony material of the body. The lime, also, plays an important part in the regulation of the heart beat. A quart of milk a day will supply one-half the amount of lime needed and one-fourth the amount of phosphorus. An egg a day will also supply one-eighth of the phosphorus requirement. Other foods that are rich in phosphorus are as follows: Whole wheat preparations, oatmeal, beans, peas, peanuts, almonds and walnuts.

Iron is equally as important as phosphorus as a constituent of the blood, and without it the blood cannot properly perform its function. Iron is particularly abundant in the yolk of eggs, in spinach and greens of various kinds, lean meat, peas, beans and whole wheat preparations, raisins, prunes, and fruits in general.

There is still another important group of food constituents which act as body regulators; among these the most important group is that of cellulose, which forms the bulkiness of foods. Its function is to stimulate peristalsis of the alimentary tract. Vegetables and fruits are particularly rich in this constituent, likewise the outer portion of cereals. Inasmuch as lack of exercise is conducive to inactivity of the alimentary tract, it is important that bulky foods should play an important part in the diet of people in sedentary occupations.

During the past few years a new class of food constituents has been discovered, of which there are at least two distinct varieties. This class, known as vitamins, although found in almost infinitesimal quantities, have a wonderful influence in the maintenance of health and in the promotion of growth; indeed, no growth can take place without the presence of the fat-soluble vitamins; and apparently a normal condition of health is dependent upon the presence of water-soluble vitamins. The latter is found abundantly in fruits and vegetables and in the bran of cereals; while the fat-soluble vitamins abound in the butter fat of milk, egg yolks and in the leaves of green vegetables.

Last, but not least, water should be used freely. While it has no caloric value, it does constitute about two-thirds of the body weight. Since there is a daily elimination of water from the body, this water must be replaced. According to the best estimates, the body needs about four and one-half to five pints of water daily, of which a portion may be supplied as a constituent of foods. Inasmuch as the activity of the bodily function of digestion, absorption and elimination of waste are dependent very largely upon the supply of water, it is important that the body be given its internal bath daily. Water as a chief constituent of the blood, is like a great waterway of a continent—it is not only the means by which soluble food is carried to the needy tissues but that by which all waste material is eliminated from the body. Therefore one should form the habit of drinking at least four or five glasses of water daily, or better still, form the bubble fountain habit, i. e., never to pass a bubble fountain without stooping to drink.

To summarize, one should have in mind the following food constituents in planning his daily dietaries: First, a sufficient amount of food—calories—to maintain normal body weight; second, a representative of muscle-forming foods—milk or cheese, eggs, lean meat, nuts or legumes; third, the mineral matter—lime, phosphorus and iron, represented by milk, eggs and green vegetables; fourth, body regulators—bulk, vitamins and water.

The dietary of a business woman should vary from that of a business man chiefly in the amount of food; a woman, because of her smaller stature, requires less food. As compared with other women, she will need more or less according to the activity of her occupation. As compared with other women of the same stature, she will require the same amount of muscle-forming material, regardless of occupation, the same amount of mineral matter, and the same amount of vitamins. In all probability, because of her more or less sedentary habits, she will need a larger amount of bulk—fruits, vegetables and coarse cereals—than the woman of more active habits; likewise, more water to increase a rather sluggish elimination.

A brief dietary scheme which will very satisfactorily fulfill the bodily requirements is as follows:

At least one pint of milk daily (one quart is preferable);
At least one fresh fruit daily;
At least two fresh vegetables daily, one preferably a salad.
One of the following daily: eggs, cheese, beans, peas or nuts. Add bread stuffs (bran or graham preferably), cereals (especially *entire* cereal preparations), potatoes, fats and sweets to maintain normal body weight.

Quite as important as the proper selection of food, is the mental state during the meal hour. A hurried, worried condition may retard the digestion of the best-planned meal. If one *must* hurry, *very* easily digestible food should be chosen, such as fruit, milk, or a soft-cooked egg. A glass of milk, an egg nog or malted milk will suffice.

Along with other matters of self-control, one should learn not to carry business worries into the dining-room.

# What Should Influenza Convalescents Eat?

Fortunately, severe epidemics of influenza occur in widely separated periods of time; however, influenza we have with us and probably will have with us always, often under the common name of "grip" with its far-reaching ill effects.

Scarcely any part of the bodily organism is spared the immediate or remote effects of this insidious disease. The germ of influenza seems to open the door through which many and different micro-organisms enter the body. The power of resistance to disease having been greatly lessened by the influenza bacillus, the organisms seek out and lay hold of some already chronically affected organ, in many instances leaving the person with a malady most difficult to overcome,

The most serious complications are of the nervous type, the gastro-intestinal, and the respiratory types. The bulk belong to the latter type. Even though this is true of an active case of influenza as well as of the convalescent with his ordinary sore throat, it is the neurotic—the extremely nervous—recuperative with his miserably weakened condition, in whom the wretched results of the disease are most discernible. He finds himself partially recovering, perhaps, with the ability to make only the slightest exertion, fretful and despondent, feeling life in general not worth the living, and without recourse, except medicinally, as to what to do for himself. He does not know that it was and is very probably intestinal-toxemia—bodily poisoning brought on through incorrect eating before and after the "flu"—which made him a fit subject for the harboring of the germ in the beginning and now in turn makes of him a neurotic.

It should be noted that one of the most common and most active symptoms associated with the "flu" is toxemia, due largely to the absorption of poisons arising from putrefying matter in the alimentary canal. These poisons eventually pervade the entire body, thereby making it an easy prey to any germs with which it comes in contact. In freeing the body of these toxins, a knowledge of a simple, well-balanced, laxative dietary is of inestimable value. A dietary of this nature, strictly adhered to, is not only a great protecton against the ravages of infectious diseases, but it also gives the hopeless victim the best chance of complete recovery, when rest and freedom from strain are added.

How, then, shall this general toxic condition found in the majority of influenza convalescents be combated? The first means by which to accomplish the desired result is the use of a laxative diet. This end must be worked for at all costs. No seemingly well person can possibly hope to remain strong and healthy indefinitely with a bad case of poor elimination, and much less can be expected of one already in a run-down condition.

The laxative diet, as insisted upon with every convalescent from the "flu," consists largely of fruits and vegetables. For children under ten years of age, according to good authority, purées of vegetables, those having been forced through a colander to remove a portion of the indigestible cellulose, are most suitable. Practically all vegetables are advisable, as carrots, turnips, spinach, egg plant, corn, peas, beans, parsnips and tomatoes. To the above, the potato, baked or mashed, should always be added, not only for the laxative quality, but also for its highly efficient food value. With grown-ups the cellulose content—the bulky, undigested part—of the food must be increased. It is unnecessary, save in cases of severe intestinal disturbance which may result from "flu," for adults to take the vegetables in purée form, and to the above-mentioned vegetables may be added celery, lettuce, cabbage, cauliflower, radishes—in fact, all vegetables, particularly the greens, provided they are not taken in too great quantity and variety at one time. The introduction of these vegetables into the diet, along with fruits, will most often prove a sufficient laxative.

As for the fruits to be used with such a diet, the same may be said of them as of vegetables, all are excellent—oranges, pears, apples, grapes, cherries, plums, grapefruit, dates, figs, apricots, and berries of all varieties. In fact, nothing better than fruit juices can be prescribed for one ill with "flu." A suggestion may be given in this connection to the "jested at" banana, which is, as compared with some other fruits, of very high food value. However, it is lacking in the laxative quality; hence, when used, it should be supplemented with other more laxative fruits, either cooked or raw. After care has been taken to add fruit to the early morning meal and vegetables with fruit again to the remaining meals of the day, the diet should have become at the least fairly laxative, except in obstinate cases, where other means have to be employed along with the diet.

Yet a diet consisting almost entirely of fruits and vegetables is inadequate for the average individual for any great length of time. The bodily requirement of two most important mineral salts, iron and lime, is deficient in a diet of this nature, unless an abundance of greens are added each day.

To make up for this deficiency in lime and iron, milk, cheese, and eggs should also be supplemented

The convalescent perhaps finds himself under weight. How can this deficiency be remedied? Fruits and vegetables are inadequate, since, except the potato, they are not fattening, though most essential to a well-balanced diet. There may, however, be a great increase in their food value by the addition of butter and cream sauces, or vegetable oils in the preparation of an endless variety of most delicious and nutritious salads. With these, wholesome beverages, as whole milk, buttermilk, malted milk, fruit juices and cereal coffee should be used. Grains are also advisable, not only for added nutriment, but also for their laxative quality. This is true in particular of such cooked cereals as oatmeal, pearl barley and wheat in any form, especially if a small quantity of bran is added.

The best results of a simple, laxative diet may easily be thwarted by much eating of fresh, hot breads, made of white flour, in the form of rolls, buns, biscuits and pastries of all kinds. Replace these with graham bread, bran bread, or whole wheat bread which, in cases of stomach disturbances, may well be taken thoroughly toasted.

With the entire barring of meats of all kinds, also tea, coffee, condiments and heavy desserts, from the diet and the substitution for these foods of a diet similar to that suggested in the foregoing paragraphs, a few may still find their resistance falling lower. This may be due to a depletion of the blood which often exists after a severe attack of the "flu."

In such cases the convalescent must again fight most efficiently with diet. Bountifully supplement the diet of fruits, vegetables, plain whole grain breads and cereals with milk, cream, egg yolks, nuts, cottage and cream cheeses—never failing to use with the more concentrated foods an abundance of fruits and green vegetables. This injunction is especially applicable to the recuperative who unfortunately possesses a predisposition to tuberculosis. He recovers seemingly, and returns to his former habits of living and eating; but, in a few months, or perhaps in a few years, the disastrous after-effects make their appearance. In such instances, every precaution must be taken to protect oneself against the tubercle bacillus.

Let every person working for a return to health, whether it be from the ravages of scarlet fever, diphtheria, measles, typhoid fever, or influenza give himself the best chance possible by the choice of a simple but nutritious diet.

# Does It Pay to Make Your Own Bread?

The answer to the above question depends upon the value of the housewife's time consumed in the making of the bread. The following figures show the cost of materials used in the making of 5 one-pound loaves, which might be termed a medium-sized loaf.

| | |
|---|---|
| 4 cups (2 lbs.) liquid (2 cups water, 2 cups milk) | .08 |
| 4 tsp. sugar (⅔ oz.) | .006 |
| 4 tsp. salt (⅔ oz.) | |
| 6 pints (3 lbs.) flour | .226 |
| 2 cups (4 oz.) for flouring board, etc. | .02 |
| ½ cup warm water (4 oz.) for yeast | |
| 1 yeast cake (⅔ oz.) | .02 |
| Total weight, 4 lbs., 26 oz. | |
| Lost by evaporation and fermentation 8 oz. | |
| Net weight, 4 lbs., 18 oz. | |
| Total cost of raw materials | .352 |
| Cost of raw material per pound | .07 |
| Cost of gas | .01 |
| Total cost per lb. loaf | .08 |

These figures are based upon the present cost of flour, $1.85 for a 24½-pound sack; making the cost per pound $7\frac{55}{100}$c.

The flour used is of the best variety of spring wheat flour. Winter wheat flour will require more flour, thus increasing the cost somewhat.

The average cost of gas used in a medium-sized oven, at $1.00 per 1,000, is 6c per hour when the oven is on full. Allowing time for the heating of the oven prior to the placing of the bread in the oven and, also for the time when the gas is not on full, the cost of fuel, in baking, is 4 to 5c, making a cost of ⅘ to 1c per loaf. This makes a total cost of 8c per one pound loaf, or a saving of 10c on a batch of 5 loaves of bread. It is readily seen that if the financial saving is the only consideration, the housewife cannot afford to bake her bread, unless her duties are few.

There is a question in the minds of people as to whether or not the bakery-made bread is as wholesome as homemade bread. This depends almost entirely upon the product turned out in both cases. The flour used in baker's bread is equal, if not superior, to that ordinarily used in the home for bread-making purposes, as the baker usually selects his flour from chemical analysis, so that he knows before purchasing, the quality of bread which he can produce from the flour. In other words, the baker usually has information which is not available to the housewife. Baker's bread made with the milk powder, which is now frequently done, is, of course more nutritious than bread made with water alone. The housewife may or may not use milk in the making of her bread.

Baker's bread is sometimes under-baked, but this is due to the public's demand. Bakers invariably report that the public will not use a crusty bread. In remonstrating to a well-known baker recently, because of his lightly baked bread, the writer was informed that bakers would be glad to bake the bread a little more, if the public would use it. He also added that he always took home, for his family's use, the bread that was discarded in his bakery as being overdone. Since the public demand a light baked bread, it is presumed that the majority of people, in baking their own bread, bake it in the same way. It would seem, therefore, that practically the only advantage in baking one's own bread is, the flavor and aroma produced in the home-baked product.

One housewife recently said that she felt that a family missed something when the bread was baked outside the home, as the baking produced such a pleasant aroma throughout the house that every one's appetites was whetted thereby. This, then, would seem to be the point, par excellence, of homemade bread over baker's bread.

# Recipes for January

## Glazed Sweet Potatoes

1 qt. sliced sweet potatoes
½ cup brown sugar
¼ cup butter
1½ cup water
Salt

Wash and pare the potatoes. Slice into one-fourth inch slices, line the bottom of baking dish with potatoes, dot with butter and sprinkle with sugar. Continue to place the potatoes in layers. Pour the hot water over and bake slowly covered, and when partly done remove lid and allow syrup to thicken.

## Carrots with Drawn Butter Sauce

4 cups diced carrots
¼ cup butter
1½ cups hot water
3 tbsp. flour
½ tsp. salt
Paprika

Wash and scrape the carrots, cut into small pieces and cook in boiling water until tender. Melt one-half the butter, add flour salt, paprika and pour on gradually the hot water. Boil five minutes, add the remaining butter cut in small pieces. As soon as butter is melted, remove from the fire and pour over the carrots.

## Tomato and Rice Soup

2 tbsp. chopped onion
2 tbsp. butter
2 cups tomatoes
5 cups water
½ tbsp. savora
½ cup minced protose
¼ cup rice
Salt

Brown one-half the butter and onions in a sauce pan; add the tomatoes and when thoroughly cooked pass through a sieve. Make a stock of the savora and water and add the tomatoes; let come to a boil and add the rice. Cook fifteen minutes, then add the protose and remaining butter. Cook until rice is done.

## Peanut Brittle

1 cup white corn syrup
¼ teaspoon cream of tartar
¼ teaspoon salt
1 teaspoon vanilla
1 cup freshly roasted peanuts, halved

Cook the corn syrup, vinegar, and salt in a saucepan until a little dropped in cold water forms a soft ball. Put the peanuts and this syrup into an iron skillet and stir until the syrup becomes a golden brown. Remove from the fire and stir in vanilla. Have ready a shallow buttered pan, pour candy in and spread out in a thin sheet. Allow to cool, then remove from pan and crack into pieces.

## New York Salad

1 slice pineapple
1 tbsp. chopped Eng. walnuts
1 section ot orange
6 cubes celery
1 tbsp. raw mayonnaise

Arrange a slice of pineapple on a lettuce leaf. Place in center a section of orange, free from membrane. On each side place the cubes of celery and mayonnaise and sprinkle with nut meats.

## Macaroons

1 tablespoon melted shortening
¼ cup honey
2 tablespoons sugar
1 egg well beaten
1 cup rolled oats
½ cup shredded cocoanut
1½ tablespoons flour
½ teaspoon baking powder
¼ teaspoon salt
½ teaspoon almond
½ teaspoon vanilla

Beat the egg in the mixing bowl, add the shortening, honey and sugar and beat smooth. Add the flavor, then the dry ingredients which have been thoroughly mixed. Drop by the teaspoonful on a well oiled cooky sheet and bake in a moderate oven about fifteen minutes. These are best eaten the day they are baked, as they tend to lose their crispness.

# Sweet Cider all the Year Round

The Bureau of Chemistry of the Department of Agriculture has issued a bulletin giving information on the concentration of apple juice for the purpose of reducing its bulk and increasing its keeping properties, thus making it available as a beverage for almost the entire year. Introduction of such a wholesome beverage, particularly at this time, is a matter of national importance.

The apple juice contains important mineral salts and organic acids, thus introducing into the body some of the important things that are often extracted in the refining processes through which many of our foods pass in their manufacture. It also furnishes food in the most easily digested form and in a form which is available for energy within a very few minutes. It is, therefore, refreshing as well as pleasing to the taste.

The process of concentrating this liquid consists of freezing it, then grinding it to the consistency of finely crushed ice. The water is then extracted by forcing it through a special machine, in very much the same way that cream is separated from milk. It is possible to reduce the liquid by four-fifths of its bulk; in other words, five gallons may be reduced to one gallon. In this form it may be kept in cold storage indefinitely.

# The Mothers' Round Table

**Conducted by MRS. E. E. KELLOGG**

# The Period of Adolescence

Although adolescence is recognized by all authorities on child culture as a most critical epoch, there appears but little in literature which can serve as a guide and help in this perilous life crisis. Doubtless this is due in part to the fact that the changes occurring to the adolescent child are but meagerly understood, and also because on account of varying environments, differing dispositions and heredity, the problems confronting parents are especially individual in character. There are, however, certain general principles which each of us should understand and adapt to our children's needs.

With my faith pinned to that oft-repeated truth of the wise man, "Train up a child in the way he should go and when he is old he will not depart from it," it used to seem to me this would be easily done; for the little mind so plastic and teachable in its early years is easily moulded into right ways by patient, painstaking efforts. If, then, we started the child right, guided him carefully and perseveringly during the plastic period of childhood, it seemed reasonable to presume that when he stepped over the threshold from boyhood to youth he would keep right on in the good old path, which ought by that time to have become a well-loved and established way, and the need of efforts on the parents' part would grow gradually less and less with the child's increase in years. This might be so were there no breakers to buffet, but there comes a time at that point of life where the brook and river meet, a period so great in its effects both physical and mental, that it is really as if the child were born anew. This is a danger point too often overlooked and rarely well understood.

Adolescence is the link which joins boyhood and manhood, girlhood and womanhood. It covers the period from twelve to twenty-one with girls, with boys from fourteen to twenty-five years.

During the stages of childhood and boyhood the young being is sportive and variedly active, interested in many things, likes to romp, climb and race, being singularly free from fear as to physical danger as well as blind to much that is morally evil.

## The Plastic Mind

Says Dr. G. Stanley Hall: "From eight to twelve the mind is wonderfully plastic, the senses are keen and the power for memorizing greater than it will probably ever be again. The brain has acquired nearly its adult size and weight, health is almost at its best, activity is greater and more varied than it ever will be again and there is peculiar endurance, vitality and resistance to fatigue; perception is very acute, and there is great immunity to exposure, danger and accident, as well as to temptation. Never again will there be such susceptibility to drill and discipline. It is the age of external and mechanical training. Reason, true morality, religion, sympathy, love and esthetic enjoyment are, however, but slightly developed. Everything, in short, suggests the culmination of one stage of life.

"Perhaps it is because the child at this point seems, comparatively, to have matured so much, that parents lose sight of the fact that the rounding-out of the stage of boyhood is in preparation for the transition period of adolescence, and thus lessen their care and watchfulness

"With adolescence the higher traits are born; development becomes more rapid; the annual growth in height, weight and strength is increased and often doubled, or even more. Important functions previously non-existent arise. The functions of every sense undergo reconstruction, and their relation to other functions change; new sensations, some of them very intense, arise. Impressions and appetite are modified, the voice changes, sex asserts its mastery and may work its havoc in the form of secret vice, debauch, disease, sending many thousand youths a year to quacks because neither their parents or teachers knew how to deal with the problems before them.

"The physical changes which evidence the new period of life are easily recognized, but parents are apt not to see the connection between the mental disturbances so common at this time and the new stage of growth the child is passing into, and they are often greatly vexed and tried with his unusual behavior. They can understand why their overgrown boy should appear clumsy, but they have little patience with his shyness and secretiveness. All these, however, are signs of the new life, the awakening of new powers.

## The Formation of Ideals

"During his childhood he has accepted without question facts as given him by parents and teachers, but now he desires to investigate for himself; he wants to know why things are so. What he experiences no longer suffices; his mind is filled with fancies, ambitions, hopes; he dreams wonderful dreams, and longs to accomplish some great deed. In imagination he addresses audiences, or writes a book. This is the period in which the formation of ideals consumes much of his thought; conceptions of the beautiful and true, the great, fills his mind. He sees no obstacle in his path, all seems possible to him in his experiences.

"Ideals are most valuable, and this period of ideals is an opportunity for the foundation of a strong character, if rightly used.

"Life is becoming more real, its aspect broader. With this reaching-out after ideals and with the increasing in body and mind comes a desire for freedom. The youth is anxious to adjust himself according to his ideals. Home seems cramped, narrow, and out of harmony with his desires. But this is not a sign of degradation, or of loss of love for home, but only a planning for the future. The mind is focused not on those things at hand, but on the far off future—upon the new home, the new work, upon the ideal. It is a natural impulse to adjust himself to the life he is already living in his imagination in company with his ideals. It is an instinct as old as the race. It is like the migratory instinct of birds.

"A sudden feeling of rebellion against authority often manifests itself, surprising the child as much as the parent. This is another instinctive habit of the race, and may crop out in the best of children with a violence that will shock everyone. It is not necessarily a bad sign, unless frequently repeated. Closely associated with this desire to rebel against home and school is the spirit of leadership. It would seem as though all the forces which will enable the man and woman later in life to render a service to the world, at this time manifest themselves with unexpected power. They are only condemned by the unthinking because they are not properly controlled.

"When they have been given the proper place in life, all will unite in giving to these powers the honor which is their due.

"The feelings become much more intense

and have wider range. Anger and pride become stronger; selfishness may be intense. Rivalry, jealousy and courage are characteristics of this period.

"With many there is ability only to work by spells instead of steadily, as his parents and teachers may expect him to do.

"With the new conceptions that fill the mind of youth come feelings of responsibility of personality and worth; as a natural result more attention is given to the appearance than ever before.

"An intense desire to read often springs up to this time. This is well illustrated in the case of Thomas A. Edison, who in his fifteenth year suddenly discovered the Detroit public library, and started in to read every book contained therein. He had read fifteen solid feet of books before any one discovered his intentions and turned him into more profitable paths. Reading the boy or girl must have at this time, and if the parents do not provide it, the child will, although his taste and selection may not at all accord with your own.

## The Social Instincts

"There is now also rapid growth on the social side. Here arises a serious problem. The saloon appeals to the boy and every amusement appeals to him. A pastor passed a confectionery store crowded to the door with boys, smoking and interchanging funny stories till ten or eleven at night. He censured the proprietor, who turned on him: 'Where, then will they go? There is no church open.' The pastor went home determined that there should be some place open, and a boys' club was organized. This is a point where parents hold a great responsibility and a wonderful opportunity, if they, like Paul, are willing to become all things to all children for their sake.

"Blest is the child whose father and mother have been so wise in their early training as to have won and held their child's confidence, and who, understanding the changes which are surging through the entire nature, respond in such ways as to overcome evil with good. If wrong inclinations manifest themselves, counteract their influence, not by dwelling upon them, but by putting something else in their place in the form of occupation or amusement. Some one has said, 'We grow toward goodness rather by pulling ourselves up to it, than by pushing ourselves away from evil.'

## The Responsive Age

"It must be constantly borne in mind that with the coming adolescence there occurs a revolution in the child's life which calls for the greatest exercise of patience, sympathy, and wisdom on the part of parents and teachers. As Mrs. Birney says: 'At the first birth and while the new and helpless being is becoming adjusted to its environment, and while it is conscious only of physical pleasure or discomfort, it is a common sight to see parents and even entire households lavish time, thought and affection on the dear baby, while at the second birth, or advent of adolescence, when tenderness and loving insight are most needed, the boy or girl often experiences real mental anguish through positive neglect, indifference or misunderstanding. It is said that no age is so responsive to all the best and wisest adult endeavor as the decade between fourteen and twenty-four. The awakened soul seems to join forces, as it were, with all the good influences in the environment of youth, that it may progress toward an ever higher development.'

## No Neutral Ground

"There is no neutral ground, no standing still during this period of adolescence; it is growth, expansion, assimilation—mental, moral and physical. The active mind must be nourished with proper ideals or it will assimilate the ignoble; the body must have abundant exercise or the force which craves expression will turn inward and prey upon itself, while morbid questionings and conditions will arise which will undermine the constitution and eventually lead to disease and premature decay of all the faculties.

To be kept healthily busy amid cheerful surroundings is the best antidote to the abnormal mental tendencies so prevalent in boys and girls of this age.

"Charles H. Morse, head master of the Rindge Manual Training School, Cambridge, Mass., says: 'From ten years' observation, I have no hesitation in saying that, were I a guardian of a boy with vicious instincts, I should get him at work with both hands and mind at once. I feel that there are few boys who could not be saved by such a training as is given by our manual training schools.'

"It is natural that boys and girls should enjoy the companionship of one another, and this in moderation and under proper surveillance they should have. Unrestrained, promiscuous association, however, is to be deplored, and the wise mother will guard both sons and daughters with care and tact in their relations to the opposite sex, helping them to avoid the emotional and merely sentimental.

"Parents must interpret the aspirations, the promptings that come to the child, and aid to establish right habits in his character. This is the time when that which is reached out for—the lofty ideals—may be firmly fixed.

### The Sympathetic Bond

"During girlhood and boyhood days is their opportunity to get into oneness with each child through living in sympathy with him. This bond of sympathy must be kept inviolate through all the years to maturity, if they would tide the child over the perilous shoals of this distinctive period. Between mother and daughter such a confidential relation is not only a delight to both but a safeguard of greatest importance to the daughter.

"A young girl, whose mother was her confidential friend, went to work in the office of a reputable (?) man. He was very kind, and gradually began to infuse a little gallantry into his kindness. The mother, foreseeing from the daily reports made her by her daughter, the tendency of the compliments and flatteries, warned the unsuspecting girl, and suggested that she take opportunity to casually remark that she told her mother everything.

"'Do you tell her all that occurs here?' asked the employer. 'I certainly tell her everything that pertains to me,' was the reply. Nothing more was said, but the intimation was enough. A girl whose mother knew even the trivial incidents of her daily life was guarded from approaches which the man would have been unwilling to have reported. This implicit confidence had been maintained by the mother's never refusing to listen sympathetically to the most unimportant communications of her daughter from childhood. Often, when weary, she had been tempted to silence the childish prattle concerning things which had to the mother no personal interest, but she checked the impulse, thinking, 'The day will come when I shall want her to tell me everything, so I must educate myself now to listen with sympathy to everything she tells.' The result is that the daughter is not happy unless mother shares in all her experiences, glad or sad, trivial or momentous."

# What the American Child Needs

What does the American child need for growth and development consistent with his dignity as a future American citizen?

A first attempt to give an authoritative and comprehensive answer to this question is found in a set of "Standards for Child Welfare" released today by the Children's Bureau of the U. S. Department of Labor.

These standards are the outgrowth of a series of conferences held last spring under the auspices of the Children's Bureau in nine of the principal cities of the country, with men and women of national and international reputation in matters affecting childhood taking part. Tentative standards were adopted by the first conference, held in Washington, D. C., and submitted to each of the other conferences. The criticisms and suggestions made at the regional conferences have been thoroughly considered by an advisory committee named by the Washington conference to put the standards into final shape. The standards as they now stand may accordingly be taken as an embodiment of the best expert opinion on the needs and rights of childhood.

While they are presented "only as minimum standards and not as in any way limiting the degree of protection which an advanced state might desire to give its children," they offer an ideal that is considerably in advance of present-day provisions for child welfare. Among other things, they recognize that the protection of the child must begin with the protection of the mother, and demand that care during pregnancy and confinement and instruction in the hygiene of maternity, infancy, and childhood be made available for all mothers through such agencies as prenatal clinics, maternity hospitals, maternity care in the home, children's health centers and the provision of systems of public health nursing adequate to reach every mother and child. They emphasize especially the need for a family income adequate to enable mothers of young children to stay in the home, instead of going out to work, with consequent neglect of home and family.

For school children, they set an ideal for more and better schools, vocational guidance and training, school lunches and medical supervision.

The standards applicable to working children, if universally in force, would effectually put an end to child labor in country and city. They include a minimum working age of 16 years, part-time compulsory continuation schools for working children between 16 and 18 years of age, and public responsibility for the health and general welfare of the working child.

The provision of more abundant recreation facilities, with proper supervision, is also named as an essential; and a more general acceptance by the state of responsibility for the care and training of "special" children—defectives, dependents, and delinquents—is urged.

The introduction to the standards recognizes that child welfare in the last analysis is largely dependent upon certain social and economic factors, and urges an adequate wage for the father, wholesome living conditions, and the abolition of racial discrimination as "fundamental to the realization of any child welfare program."

# Safety Zones for Babies

Babies who expect to spend their first year of life in a city should take care to choose a "safety zone." According to a report on Infant Mortality in Saginaw, Michigan, given out by the Children's Bureau of the U. S. Department of Labor, it is more than six times as dangerous for a baby to be born in one section of the town as in another. The investigations of the Bureau have shown that the essentials of a safety zone for babies are that a majority of the fathers in it must earn a living wage, the mothers must not be employed during the year before or the year following the baby's birth, the mothers must receive proper care when their babies are born, both fathers and mothers must be able to read and write, and the babies must be properly housed.

In Saginaw there were several wards where poor drainage, insanitary disposition of garbage and refuse, outdoor toilets, shalow well drinking water, and dwellings which lacked sewer connection rendered the section unsafe for babies. In the ward in Saginaw where the least favorable conditions prevailed, one baby out of every 6 died before he was a year old, as compared with one out of every 34 in the best residential wards. In the ward having the highest infant mortality, a majority of the fathers had very small wages. Of the 21 babies who died in this ward, 18 had fathers earning less than $850 a year. The infant mortality rate was only about half as great for those babies whose fathers earned between $850 and $1050 a year as it was for the city as a whole, and only about one-fourth as great for those whose fathers earned $1250 or more, while babies who were unfortunate enough to choose fathers earning less than $450 died at a rate over twice as great as that for the whole city.

It is only when the father's earnings were small that the Saginaw mothers went out to work. The infant mortality rate for the babies of working mothers was 132.7 as compared with 78.3 for those whose mothers were not gainfully employed. A low income also means that the mother as a rule does not receive proper care before the baby is born. In Saginaw the deaths of two-thirds of the babies were due primarily to prenatal causes. "Prenatal Care" says the report, "is especially needed for the inexperienced young mother and in families in which the father's earnings are low, judging from the high mortality among first-born babies and in the lower earnings groups."

There were, however, in Saginaw, a sufficient number of safety zones to make the rates for the city as a whole compare very favorably with other cities where the Children's Bureau has made a similar study. The infant mortality rate for Saginaw is only 84.6, notably less than that of the registration area. Thirty-nine per cent of the births occurred in families where the father's earnings were over $850 a year, a proportion exceeded only by that of Brockton, Mass. Less than an eighth of the Saginaw mothers were gainfully employed, during the year prior to the baby's birth or during any part of the baby's first year. In the manufacturing cities of Brockton and New Bedford, Mass., one-fifth and two-fifths of the mothers, respectively, had worked in order to supplement the family income. Only a few of the Saginaw mothers, even when employed, worked away from home, so that a majority of the babies had the advantage of breast feeding and mothering. The attendance of a physician at confinement in Saginaw was the rule, to which there were few exceptions. Very few of the mothers were cut off from useful information regarding the care of their babies through their inability to read. Only 6 per cent of the Saginaw mothers were illiterate, as compared with 13 per cent in Brockton, Mass., 16 per cent in Johnstown, Pa., and 17 per cent in Manchester, N. H.

But, although Saginaw is a comparatively safe place for babies, all babies do not have an equal chance to live. If every baby is to be given a chance, the report points out, every family must be enabled to maintain a fair standard of living and every expectant mother must be in a position to secure proper care and advice. In this way every part of the city can be made a safety zone for babies.

# MEDICAL PROGRESS

## The Cancer Scourge

### How It Can Be Met Medically

L. DUNCAN BULKLEY, A. M,. M. D.

Senior Physician to the New York Skin and Cancer Hospital, etc.

In the April issue of GOOD HEALTH, Dr. Wm. J. Mayo presented a gloomy picture ot the "Cancer Scourge," although he did not mention the most gloomy feature, which is, as many surgeons have acknowledged, that fully 90 per cent of those once attacked by cancer still die from the disease. Also, that under the prevailing views and treatment of cancer the recorded death-rate of the disease, according to the United States Mortality Reports, has steadily *risen* over 30 per cent since 1900, whereas that of tuberculosis has *fallen* over 30 per cent during the same period, under most careful medical treatment. And yet Dr. Mayo says that "while science does not yet know the exact nature of cancer, it does know the conditions which lead to its development, and these conditions may in a large measure be controlled. The terrible mortality from cancer is therefore largely due to ignorance."

But he still clings to the idea that an early surgical operation will be effective in checking the scourge, stating that "more than one half of these deaths are preventable, and half of the remaining fatal cases might have been cured by an early operation." Quite as reasonable would it be to suppose that the early removal of a gouty toe would check the disease, or that the prompt excision of a tuberculosis deposit or a syphilitic gumma would eradicate the malady!

The terrible and increasing death-rate from cancer is certainly due to ignorance, or to the *ignoring* of the medical features of the disease, which have been mentioned more or less strongly by certain surgeons as well as physicians from time to time during the past hundred years. These have been pointed out so frequently by the present writer that a repetition of them is hardly necessary now. A brief mention, however, of some of the important facts regarding the medical aspects of cancer may not be without interest to those who are not familiar with them.

While it is well recognized that the local lesion which we call cancer, wherever it is localized, must begin at some particular point, the wholly local nature of the disease has never been demonstrated. On the other hand the failure of surgery to check its steadily rising mortality certainly shows that it is futile to expect that the simple removal of the affected part will arrest the true constitutional state which has produced the degeneration of previously normal tissue cells, as the great surgeon Abernethy remarked over a hundred years ago. He said: "The best timed and best conducted operation brings with it nothing but disgrace, if the diseased propensities of the constitution are active and powerful. It is after an operation that, in my opinion, we are most particularly incited to regulate the constitution, lest the disease should be revived or renewed by its disturbance."

Dr. Mayo, with other surgeons, places much emphasis on and draws conclusions from surgical results in cancer of the skin, which the reports of the United States Government show causes only 3.7 of the total number of deaths. As we all know, cutaneous epithelioma in most cases is a relatively slight affair, when it has not been tampered with by superficial caustics, as nitrate of silver, and can be cured by other methods without leaving the disfiguring scars of surgery. In all of our studies and statistics, epithelioma of the skin is excluded, and reference is made only to deep-seated cancer, as of the breast, uterus, and other internal organs and parts.

The following brief statement represents facts which are almost universally accepted by physicians and surgeons in regard to real deep-seated cancer, which last year caused the death of about 75,000 persons in the United States.

1. Cancer is but a deviation from the normal life and action of certain of the ordinary cells of the body.

2. Cancer is *not* caused by a micro-organism or parasite.

3. Cancer is *not* contagious.

4 Cancer is *not* wholly of traumatic origin, although local injury may determine the location of the cancerous process.

5. Cancer is *not* hereditary in any appreciable degree.

6. Cancer is *not* altogether a disease of old age.

7. Cancer does *not* especially belong to or effect any particular sex, race, or class of persons.

8. Occupation has *not* any great influence on the occurrence of cancer.

What then, is the cause of cancer, which has become such a scourge and whose mortality is so certainly rising under the present views as to its local nature and surgical treatment?

This is a difficult question to answer briefly, except by the statement that it is due to the present methods of erroneous living associated with modern so-called civilization; to wrong eating and drinking, with indolence in some and over-nervous strain in others. All of these tend to an imperfect metabolism, or interchange of tissue elements in the body whereby certain cells take on an abnormal action which we call cancer. The total absence of any definite cause shown by the laboratory, as indicated in the preceding eight negative postulates, together with the positive indications of a deranged system shown by clinical studies, warrant us in a certain conclusion; namely, that cancer is but the *product* of a constitutional disturbance, and that it is, of course, useless to cut out the diseased mass while the real cause remains, ever ready to produce a recurrence of the disease in the same location or elsewhere. For experience constantly shows that cancer frequently recurs with even greater malignancy after surgical operations.

It would take far too long to detail fully here the clinical, statistical, and laboratory evidences of the constitutional nature of cancer, which have been fully elaborated elsewhere, and only the briefest reference to them can be made.

1. The *blood* has been shown by the laboratory to exhibit many manifest changes, which indicate vital alterations in the action of the organs which form blood, and so control the nutrition of the body and its cells.

2. The *urine* as an indicator of the character of the arterial blood-stream from which it is formed, has been shown by many to present abnormalities which are of significance. The total output of urinary solids is greatly deficient, both in patients with early disease and during its entire progress, and grave errors are constantly observed in its nitrogenous and sulphur partition.

3. The *intestinal secretion* is almost invariably deficient, both in early and late cancer, and the autointoxication produced by the millions of micro-organisms generated through intestinal stasis and fecal putrefaction is one of the prime elements in the causation of cancer.

4. The *saliva,* upon which the proper digestion of starchy elements of food depends, is almost always found to be acid, instead of alkaline or neutral. Rapid eating, without thorough mastication, thus starts the digestion wrong, and is, therefore, one of the contributory causes of cancer.

In regard to food, it has been repeatedly shown that aborigines and those who live simple lives, largely vegetarian, are almost if not entirely free from cancer, while the disease and its mortality increases in proportion to their adoption of the customs and diet of so-called civilization.

Statistics from many countries have shown that the increase in the consumption of meat, coffee, and alcoholic beverages appears to be coincident with the great and proportionately greater augmentation of the mortality from cancer. In England the consumption of meat has doubled during the last fifty years, while the deaths from cancer have increased *fourfold.* Laboratory experiments have repeatedly demonstrated the controlling effect of diet on animals inoculated with cancer.

Nerve shock and nerve strain have been shown to have a direct influence in the production of cancer, and there can be little doubt but that the enormous strain of modern life is an element of importance in this direction.

From all these data it appears incontestably true that cancer is not a purely local disease, but has constitutional relations which clearly show that the lesion or mass which we call cancer is but the *product* of antecedent derangement of the blood-stream from which the deranged cells are formed. There have been several theories in regard to certain "embryonic rests," or pre-natal misplacements of epithelial cells, which have been regarded as the starting points of the cancerous process. But these have been found to exist in every one, and no satisfactory explanation has been given why they do not always give trouble, nor why cancer develops from them at certain times, if indeed it ever does do so. The real reason is found in the disturbed blood condition, with deranged metabolism, as indicated in what has preceded.

This is not the occasion to enter upon the medical treatment of cancer, which has been abundantly set forth elsewhere; suffice to say that an absolutely vegetarian diet, and careful medication, to restore and secure perfect metabolism and a correct blood-stream, yields results incomparably better than any obtained by surgery. With the spreading of more enlightened views in regard to cancer we may certainly hope for and expect a material decrease in its total mortality, comparable at least to that which has been obtained in tuberculosis.

# Tuberculosis in the United States

Many people are laboring under the delusion that the tuberculosis problem is solved, that we have found out the cause of tuberculosis and have organized effective measures against the disease. This is a great mistake. We have enacted "no-spitting" laws and we have erected a few sanitariums for consumptives, but this amounts to practically nothing.

Tuberculosis has been temporarily checked, but will soon again show advance. In some parts of the country, for example, in Chicago, the annual mortality rate from tuberculosis has already risen above the average for several previous years. In Michigan, tuberculosis has increased among men nearly five per cent, and throughout the United States the statistics of the U. S.

Census Bureau show a relative increase of the death-rate of men of 1.8 per cent. The greater number of men employed in factories and the increased indulgence in smoking, afford a reasonable explanation of this mortality of men from tuberculosis.

The American draft discovered 67,000 young men infected with tuberculosis, and 22,000 more, making nearly 100,000 in all, were sent back to their homes from the military camps. In other countries the number of young men found suffering from tuberculosis was still greater.

The real fight against this insiduous disease is not yet begun. The problem can never be solved by State, county or municipal sanitoria. Tuberculosis is a disease of the home. When the mother of a family has tuberculosis her husband has it, and her children have it; the whole house is infected, and more than likely several members of the family, one by one, will in succession fall victim to this fell destroyer.

What was done with the 100,000 young men found unfit for military service because of tuberculosis? They were simply sent home. Nothing was done to deliver them from the inevitable fate awaiting them. They were sent back, in most instances, to homes already infected with the disease, to die along with the rest of the members of their family. What should have been done? In every instance, the young man and the family from which he came, should have been placed under competent medical care,—a well-trained physician and a public health nurse. The mother of each family should have been taught how to feed herself and her husband and children so as to increase vital resistance against the ravages of the infectious germs. She should have been instructed, also, how to arrange out-of-door sleeping quarters for every member of the family, and, if necessary, financial aid should have been given to insure this very essential fresh air provision. The entire family should have received instruction in biologic living and the cultivation of health, so as to lift the body to a plane of high resistance.

Anti-spitting ordinances are good, but they afford no real protection against tuberculosis. The germs are everywhere. Everybody is exposed to infection. Personal immunity through right living is the only safety. The only means which can be relied upon for staying the ravages of this, the greatest plague of civilization, is a nation-wide survey, including the inspection of every house or other building occupied by human beings and the examination of every person young and old, with instruction of the entire population in the cultivation of such habits as will increase resistance to tuberculosis and disease in general.

Michigan, a few years ago, led the way in a movement of this sort, which showed its practicability and the splendid results which can be achieved; and although the Legislature refused to continue the appropriation so that the work might be prosecuted to a wholly successful completion, the State Tuberculosis Association has continued its efforts so far as the funds at its command would permit. It has set a particularly worthy example to all other States and countries by looking after the drafted men and soldiers who were found to be suffering from tuberculosis, more than a thousand such persons having been cared for through the agency of the State Association, and with most excellent results. Recently the Federal Government has taken up this work and from now on will see that returned tuberculous soldiers receive proper attention.

Every Legislature in the United States ought to be appealed to for the passage of a bill appropriating an adequate sum to defray the expenses of a tuberculosis survey and an organized campaign against the disease, and the appointment of a commission to take charge of the work.

## Vegetarian Meat Extract

In the manufacture of beer and other fermented liquors in which the starch of grain is converted into alcohol, yeast is used, and is developed in such quantities as to become a waste product of considerable amount.

This yeast is rich in protein and in flavors practically identical with those found in meat. The process of utilizing the yeast is simple. (See *Sci. Amer.* Aug. 23, 1919, p. 191.)

"If yeast is washed free from wort and mash and left in pure water, it no longer grows, as there is no food for it. The enzyme, endo-tryptase, breaks down the complex protein molecule into simpler compounds—albumoses, peptones, amido acids and ammonia in consecutive order. If the process is stopped by sterilizing at 70 degrees C., thus destroying the enzymes at a point at which peptones and amido acids predominate, the product becomes a splendid food, containing as much as 35 per cent of peptones and amido acids. When well made, it has the same taste as beef extract, and is easily digested. The sale as 'vegetable extract' has been large in England."

## The Rat Menace

Rats are not only very destructive, but are a dangerous source of disease. They harbor fleas and other parasites that are dangerous to man. Rats suffer from bubonic plague, "black death," as do human beings. Says the *Detroit Free Press*:

"When rats die of the plague, the fleas leave them and attack human beings. It has been asserted that the terrible epidemics of the Middle Ages which devastated Europe were due to rat migrations, a peculiarity which these rodents share with birds. The bubonic plague takes half a million lives in India every year and has persisted at this rate for centuries. There are two species of rats, the black and the brown or Norway rat, the latter being the larger and more powerful, while the former is most dangerous as a disease-carrier. Whatever the species, rats cause an enormous property loss in this country every year. Being especially fond of casein-glue —glue made from milk products and used in the manufacture of aeroplanes — they are known to have destroyed aircraft in storage.

"Rats are remarkably intelligent, and are almost uncanny in their ability to detect danger. Sailors believe they desert an unseaworthy ship; soldiers in the trenches complained of such companions until they discovered that they invariably gave warning of a cave-in, leaving the unsafe portion. But the rats could no more stand German poison gas than men, and a few gas attacks cleared them out.

"In view of the double menace of disease and destructiveness, any rat-infested community should take prompt measures toward their extermination."

## Food Salts Essential to Life

In addition to starch or sugar (carbohydrates), fats, and protein, foods contain certain organic salts which are essential to life and health. Kellner fed animals food from which the salts had been extracted and they all died, and they died sooner than animals that had no food at all. Iron and lime are among the most essential of all salts. The boiling of vegetables, when the water is thrown away, may remove as much as half, or even more, of the lime and iron salts of food.

Because of unscientific methods of preparing and cooking foodstuffs, probably half of the American people are suffering from lime or iron starvation.

## Bad Effects of Tobacco and Coffee

B. L. Duran, a Spanish physician, reports a study of cases of arteriosclerosis in which there is sudden loss of consciousness, sometimes with temporary paralysis, also in some cases attacks of angina pectoris. He finds the use of tobacco and coffee most damaging in these cases, a fact which points very strongly to smoking and coffee drinking as active causes of the conditions described. It is known that both tobacco and coffee raise the blood pressure, a fact which forbids their habitual use, not only by persons who have already developed arteriosclerosis, but by those who do not wish to develop this degenerative disorder.

## High Heels

The Illinois Health News traces defects in eyesight and hearing to bad attitudes in standing and sitting.

"The stooping posture cramps the lungs and other internal organs, and interferes with normal development. In this way, diseases get their first foothold. It follows, therefore, that the first step in preventing consumption may be to fit a child with proper glasses; and the second step must be to create a habit of right breathing and posture, either when sitting, standing, walking or running. Flat foot and broken arches are the result of carelessness in the use of the feet, and the wearing of improper shoes. High heels are an abomination unto the Lord. They are largely responsible for the weak ankles of girls and women. They interfere with grace of movement. The girls imitate cows in walking upon their toes, and many also acquire the bovine grace of walking. 'Hammer toes,' sometimes requiring amputation, are another product of high heels. The high heel insanity is developed during school life, and one of the best preventives is the teaching of graceful exercises."

## Preventable Diseases

In a single year, diphtheria and typhoid fever claimed 2,300 lives in New York State, according to a recent issue of the *Health News,* the monthly publication of the New York State Department of Health.

Had these deaths occurred at one time as the result of a fire or explosion, the fact would have been headlined from one end of the country to the other, yet these deaths were just as needless, just as preventable, and just as much due to someone's carelessness.

It is high time, according to the State health officials, that the people awake to the fact that diseases like typhoid are a discredit to the community in which they occur. Polluted water supplies can be rendered safe by filtration and chlorination, while the danger of infection from milk can be overcome by pasteurization.

It would be well for municipalities and private companies to understand that they may be held legally responsible for lives lost by illness due to carelessness, ignorance or inaction in the face of threatened outbreaks of preventable diseases.

## Left-Handedness to Be Let Alone

Dr. Jones, of the University of Dakota, has been studying left-handedness, and he has found that when an attempt is made to train a left-handed person to write with the right hand, he is likely to stammer. This is due to interference with the speech center, which is normally on the left side of the brain. In left-handed persons it is on the right side. If an attempt is made to learn to write with the right hand, the result is an effort of Nature to transfer the speech control from the right to the left side of the brain, and the confusion produced causes stammering. The left-handed person should be let alone. He is constructed differently from a right-handed person, and this fact should receive consideration. Nature is wise, and will not tolerate too much interference.

## Antitoxin in Diphtheria

An attending physician, Dr. Toledo Piza, calls attention to the importance of using larger doses of antitoxin than are commonly employed. He recommends ten thousand to twenty thousand units in mild or moderate cases and twenty-five to thirty thousand in the graver cases, even reaching as high as thirty-five thousand in very serious cases. The entire amount is given at the same time, one-third under the skin, one-third in the muscle, one-third in a vein.

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# Winter Benefits

We have so long been accustomed to look upon winter as a misfortune and a hardship that the very word "winter" has come to be a synonym for misery and discomfort. Modern observations and experience have, however, shown this conception of winter to be erroneous. The fact is that winter brings us special advantages which are of no small value. Among these are pure air, absolutely free from germs, generally free from dust; cold air, Nature's most powerful tonic; a keen appetite, and a great increase in vitality and physical stamina.

In the Arctic region, these advantages are almost constantly present. In the tropics, they are as continuously absent. The wonderful influence of a pure, germless atmosphere, crisp and vitalizing in its action upon the human organism, is well illustrated in the fact that the survivors of Arctic hardships and privations, great and perilous to life though they be, always come back to civilization in the finest health. The interesting records of daily experiences published by the various explorers who have spent months and years among the ice floes and blizzards of the polar regions include no mention of gastric woes, colds, influenzas, pneumonias or rheumatisms.

The universal experience has been continuous robust health, notwithstanding hardships of the most trying kind, exhausting exertions and a most unnatural dietary.

This extraordinary health, notwithstanding many disadvantages, must be due to the purity and density of the polar air, the absence of dust and dust germs, and the stimulating influence of cold, since these are the only salutary factors which are increased in the polar regions.

It thus appears that a winter near the North Pole is a most effective means of securing a great health uplift, a veritable physical regeneration. These experiences are verified, too, by the wonderful results obtained in the outdoor treatment of tuberculosis, now recognized as the one and only means of curing this malady. The best results are obtained in the cold season and in the coldest climates. Physicians no longer feel it necessary to recommend their patients to remove to a warm climate, but simply to send them out of doors in all climates and in all weathers, finding the coldest climate and the coldest weather the best.

At the present season of the year it is most appropriate and may be highly profitable to call to mind these facts and to apply them to personal experience. As the season advances, the average temperature of the atmosphere will lower from week to week. The north wind will bring us more and more liberal supplies of polar air, dry, frigid and germless. Sweeping over the frozen and snow-clad earth, the clean, crisp air from the Arctic zone will come to our lungs and tissues uncontaminated, unless by contact with unclean human environments.

Here, then, is a chance to enjoy all the advantages of a polar trip without its hardships and dangers, without even leaving home. The polar weather and climate come to us, and all we have to do is to utilize them. The winter season, then, offers an exceptional opportunity for health improvement. The germs, the excess of moisture, the depressing heat, the lassitude and enervation of summer airs, are all gone. Oceans of the purest, sweetest, crispest, most vitalizing air are now sweeping over the north temperate zones, bringing health and vigor and increased resistance to disease and fatigue to all who will accept the blessings, without money and without price.

The newest medical science and the most recent human experience have opened our eyes to the surprising fact that winter's cold is not an enemy, but a friend. Jack Frost is not a thief and a robber, but a Good Samaritan. Winter is not a calamity, but an opportunity, a chance to rally our vital forces, to recover the stamina which summer germs have weakened and summer heat has attenuated. The alternation of seasons afforded by the temperate zones is the greatest possible blessing to civilized man. The cold season affords a means by which the disease-producing influences of our perverted civilization may, to a very large degree, be counteracted. Civilized man is, indeed, much better prepared than is the Eskimo to avail himself of cold weather advantages. The polar summer is too short to permit the Eskimo to raise a crop, and so he is compelled to live upon a diet better suited for the Polar bear or the Arctic wolf than a natural vegetable feeder, whose proper home is some thousands of miles to the southward. The igloo in which he lives has no facilities for ventilation, and affords no convenience for baths. His skin garments shut away both light and air from the cuticle and interfere with skin excretion and respiration. The Eskimo emerges from his winter hibernation weakened and debilitated, like a bear waking from his long winter sleep.

Science has taught us how to support an unnatural covering of the skin without seriously interfering with its functions; how to construct houses to live in without making them death traps; how to provide at all seasons wholesome food adapted to our natural needs. Thus the civilized man is prepared to reap all the physical advantages which pertain to crystal-clean, zero air, while he is able at the same time to avoid all the disadvantages of polar temperatures.

To be able to avail ourselves of winter's blessings we must first of all change our attitude of mind. We have been accustomed to look upon cold as a deadly foe. We must dismiss this idea and become fully possessed of the purpose to attain all the benefits and delights which winter can give. In order to do this it is important to know that to get all the possible advantages of cold air it is not necessary to suffer any discomfort or inconvenience whatever. There are to be no chills, no shivers, no longing for snug warmth and cozy comfort. These things must be provided for by means of extra wraps, hoods, mittens, if necessary supplemented by hot-water bottles or other warming devices. The only thing essential is the breathing of cold, dry, pure air, and perhaps the exposure of the face to the nerve stimulating influence of a zero-cold atmosphere. The hands and feet, the whole body, must be kept warm and comfortable at any expense, otherwise no benefit will be gained. The blood must be kept in the skin and peripheral organs. A cold skin and cold extremities mean congested liver, the stomach and other viscera overfilled with blood and consequently in a crippled condition, and an overworked heart. With an equable circulation and the exhilaration and feeling of reinforced energy and fitness which come from the appropriation of winter opportunities, there is an enormous increase in the joy of living which is more than ample compensation for the little effort and expense required to make cold air a comfort and blessing of untold value to us.

# "Tobacco Reform"

Of course tobacco is bad and needs to be reformed. But it is altogether bad and there is no good use to which it can be put except to kill snakes, vermin and agricultural pests. It cannot be reformed.

It is the tobacco users who need to reform. Under the above heading the editor of the *Moon-Journal*, of Battle Creek, thus admonishes smokers:

"Liquor men made an honest effort in recent years to reform the saloon. But they started too late, and prohibition overwhelmed them just the same.

"Tobacco may be next—there's no telling, and scattered attacks are being made already from many quarters. Perhaps dealers and devotees would do well to begin in time, reforming tobacco.

"The business itself does not seem to harbor any such abuses as those which turned the respectable public against the saloon, but there is probably a good deal of room for reform among consumers. A self-confessed user of the sacred weed makes a scathing arraignment of smokers' habits. 'Most men, when they begin smoking,' he says, 'cease to be gentlemen.'

"He lists these offenses, among many:

" 'Disregard of the rights of others, as shown by smoking in public places.

" 'Holding dead and odoriferous cigar butts in crowded cars, restaurants or offices.

" 'Scattering ashes all over the floor, regardless of propriety or safety.

" 'Blowing tobacco smoke into other people's faces, when the offenders would not think of doing the same with their smokeless breath.

" 'Indiscriminate spitting.

" 'Come on, fellow-smokers,' he urges, 'let us rid ourselves of some of these unpleasant tricks.' It would serve, undoubtedly, to allay a good deal of the resentment felt by many people against tobacco.

"It should be recognized more generally that tobacco is necessarily offensive to people who do not use it, and decency requires that the offense be made as slight as possible."

Certainly, the smokers ought to begin to mend their ways. They ought to stop smoking, of course. They owe it to themselves as well as to the public to abandon the use of so ill-smelling a weed. If they insist upon poisoning themselves, however, they have no right to compel others to join them in their "dope habit." As Mr. Dolliver says, "Tobacco is necessarily offensive to people who do not use it"; and decency demands more than this. Decency demands that there shall be no offense. More than half the people of the United States are non-smokers. Probably more than half of all the men living in this country are smokers, but fortunately as yet there are very few women smokers, so the non-smokers are largely in the majority; and yet it is practically impossible to go upon the streets, to enter a public conveyance, to visit a hotel, to attend a lecture or a concert, or, indeed, to go anywhere outside of one's own private quarters, without coming in contact with the nauseous odors of tobacco. The smokers are having things pretty much their own way, especially since the beginning of our war with Germany; but thousands of people are awakening to an appreciation of the enormity of the tobacco evil and recognizing how great a menace it is to the vital interests of America.

The liquor dealers made a great effort to reform the saloon, but they could not. The saloon was so thoroughly evil in every particular that it could not be made decent or wholesome.

The tobacco habit is in the same situation. It cannot be reformed; it will not be reformed; but sometime society will cast it off, along with other handicaps which hinder human progress and promote race degeneracy and decay.

# Intestinal Origin of Certain Eye Diseases

Mr. Ernest Clarke has stated: "Although not generally recognized, the eye, as a matter of fact, is an organ that registers in a very delicate manner certain conditions of the system, and amongst these conditions intestinal toxemia is markedly one.

"In quite early youth the crystalline lens is practically a small bag of semifluid jelly, and accommodation takes place by its being squeezed by the action of the ciliary muscle in such a manner that its anteroposterior diameter is enlarged. So great is the squeezability (if I may use the term) of the lens in the very young, that an accommodation power of 20 D. can often be recorded. As age advances, a hardening process, or sclerosis, goes on in the lens as in all the other tissues of the body; and so its elasticity becomes less and less, until a point is reached when the near point of accommodation which represents the fullest accommodative power has so far receded that the normal eye requires assistance in the shape of a convex lens in order to see near objects distinctly. This hardening of the lens may be delayed by the absence of, and accelerated by the presence of, certain poisons in the system; and intestinal toxemia takes a very high place in the list.

"One individual has only an accommodative power of 2.5 D., while another has 8.5 D. What is the difference between these two individuals? In the one aged forty with only 2.5 D. accommodative power, the lens has hardened prematurely and become equal to the lens of a man aged fifty-five. That is, he is suffering from premature senility, and in the great majority of cases, in physical appearance, habits and powers he is aged fifty-five. There are many causes which help towards this premature senility, but the factor common to a very large majority of them is intestinal stasis. On the other hand, those whose accommodative power is higher than normal look much younger than their years, and are in every way younger; and on going into their history it will be found invariably that they have taken the greatest care to avoid the least suspicion of intestinal stasis.

"These facts, in connection with the premature senility of the lens, are another proof of the correctness of the old saying that 'a man is as old as his arteries': the premature sclerosing of the vessels often taking place at the same time as in the lens.

### Old Eyes Made Young

Here are three cases which have come under the writer's observation, and which fully confirm the above observations by Professor Clarke:

A young woman of eighteen years found her sight failing. Examination by an eye specialist showed that her eye accommodation was so much impaired that she needed glasses such as are usually worn by a person of fifty years. By a change of regimen and improvement of bowel action the abnormality in a few weeks disappeared.

A college professor of fifty years, wearing glasses adapted to a presbyopic person of his age, after following for a few months the regimen recommended, found his eyes so improved that he had the accommodation of a person fifteen years younger.

A physician sixty years of age, who had adopted a laxative, aseptic regimen, found his glasses uncomfortable, and on examination by an oculist discovered that the glasses which he had been wearing for several years were ten years too old for him. A change was made to "younger" glasses, and he is still wearing them at the age of sixty-six, with entire comfort, although they are adapted to a person of fifty.

In the above cases the rejuvenation of the eyes was accompanied by the disappearance of numerous symptoms of senility, and a great increase in physical and mental vigor and endurance.

# Bile and Meat Eating

The average human being secretes daily about one pint of bile, which contains an ounce of solids, among which is to be found a variety of unique substances. The bile pigments which are formed, both in the liver and outside of it, are highly poisonous substances, and when secreted through the bile are not reabsorbed. It was shown by Schiff, however, that some of the bile elements are absorbed and again excreted. Whipple, of the University of California, has recently shown that the amount of bile acids formed and excreted by the liver depends upon the amount of protein taken. An increase of the protein intake may suddenly double the amount of bile acids excreted. Meat protein particularly was found to increase the bile acid excretion.

This interesting fact makes certain that the high protein diet, and especially a meat diet, has the effect to enormously increase the work of the liver. Folin showed some years ago that the amount of urea contained in the urine depends chiefly upon the amount of protein eaten, as the urea is mainly derived from the protein of the food and very largely represents a surplus of it. It appears now that a high protein diet, and especially a meat diet, also increases the work of the liver by requiring the liver cells to secrete a large amount of bile acids.

# Gastric Pains Due to Adhesions

Adhesions of the intestines or other viscera to neighboring viscera seldom produce serious inconvenience and are not likely to be accompanied by pain, but when the stomach or the intestine is adherent to the sensitive lining of the abdominal wall, the so-called parietal peritoneum, pain is likely to result. The pain is likely to occur, especially at first, in paroxysms, though after some years it may become continuous though less acute. The sensation is not that of a stabbing pain, such as is experienced in gastric ulcer, and is usually increased after meals, sometimes becoming quite intolerable, but is not affected by the character of the food. The pain is generally felt at the pit of the stomach, but this fact is not significant, since all pains affecting the viscera of the upper abdomen are likely to be referred to the epigastrium. Vomiting may occur just after food is taken into the stomach, but this is not a common symptom. Occasionally food taken the day before is vomited, which indicates that the adhesions have given rise to obstruction of the pylorus. Pain is sometimes felt when pressure is made with the tips of the fingers over the inflamed area, but pain is not likely to be produced in this way if the adhesions are located on the back side of the stomach. In most cases the patient, if closely questioned, will give a history of symptoms of gastric ulcer and sometimes occasional vomiting of blood, though this is not common.

The pain due to adhesions may usually be relieved temporarily by the application of very hot fomentations; and if this measure is perseveringly employed two or three times a day for several months, the results are sometimes most gratifying, all painful sensations disappearing.

# Changing the Flora in Children's Diseases

*The Journal of the American Medical Association* tells us, editorially, that

"According to the San Francisco pediatricians, the return of such children (with foul stools) to normal health is coincident with a regression of the intestinal flora toward predominantly fermentative types (change of flora). Such a change, they further aver, can be brought about in the infant by withdrawing animal protein and persistently feeding large amounts of lactose and other carbohydrates—not, however, by mere administration of cultures of ***B.*** *acidolphilus*. Since the progressive cessation of the symptoms of intoxication and a return of toxemic patients to nutritional health coincides, to cite Porter Morris and Meyer, with the recognizable dominance of a fermentative flora, the therapeutic value of suitable dietary regulations is obvious. For years it has been customary in the management of infants suffering from putrid diarrhea, to furnish cereal decoctions or carbohydrates like lactose and maltose to them. The wisdom of such dietotherapy in suitable cases is being established on a scientific basis by some of the studies like those to which we have just referred."

One point of importance the investigators referred to above seem to have overlooked, namely, the necessity for increasing the activity of the intestinal canal. In order o plant protective bacteria in the colon, it s necessary that the movement of the food along the canal should be hastened. Stasis, or delay of food residues in the colon, is one of the principal factors in encouraging the development of putrefactive bacteria. An incubation period of about twenty-four hours is required, according to Tissier, for the development of the putrefactive process. If the food residues are dismissed from the body with normal promptness, which means within fifteen to twenty hours from the time the food is eaten, there will be no time for the development of putrefaction, since the stay of food residues in the colon will be only eight to twelve hours, while the fermentative flora will, on the other hand, have an opportunity to develop a sufficient degree of activity to produce the acids necessary for the prevention of putrefaction and the stimulation of the colon to normal activity.

By the free use of bran and mineral oil, the activity of the colon may be encouraged to such a degree that the protective flora, the *Bacillus acidolphilus* and other acid-forming organisms, become established in the colon, and by their presence discourage the development of putrefactive bacteria and the poisons which they produce. More than this, when the activity of the intestine is encouraged in this manner, in connection with a proper dietary, starch and other carbohydrates are carried into the colon in sufficient quantity to exercise an important controlling influence over the bacteria which ordinarily produce toxins and ptomaines.

Bienstock, Kendall and others have shown that in the presence of carbohydrates in sufficient amount, the colon bacillus and other organisms which ordinarily encourage putrefaction become acid-formers and cease to be injurious.

# Benjamin Rush on the Proper Mode of Eating

Almost every philosopher has said something about eating. Pythagoras, Socrates, Plato, Aristotle, and a long line of lesser lights, have told us how to eat so as to derive from this function the greatest possible pleasure and profit.

Taking for his text the remark of an irritable Frenchman who, while dining in the midst of a loquacious company, exclaimed, "Hold your tongues, I cannot taste my dinner," Dr. Rush tells us that "conversation sometimes detracts from the pleasure of eating." He further says:

"When we consider that part of the art of cookery consists in rendering the taste of aliments agreeable, is it not probable that the pleasure of eating might be increased beyond our present knowledge upon that subject, by certain new arrangements or mixtures of the substances which are used, to impart a pleasant taste to our aliments?

"Should philosophers ever stoop to this subject, may they not discover and ascertain a table of the relations of sapid bodies to each other, with the accuracy that they have ascertained the relation of the numerous objects of chemistry to each other?

"When the tongue and stomach agree in the same kinds of aliments, may not the increase of the pleasure of eating be accompanied with an increase of health and prolongation of life?

In order to render it truly exquisite, it is necessary that all the senses, except that of taste, should be as quiescent as possible. Those persons mistake the nature of the appetite for food, who attempt to whet it by accompanying a dinner with a band of music, or by connecting the dining-table with an extensive and delightful prospect. The undue excitement of one sense always produces weakness in another."

# Scurvy from Heated Milk

For some years there has been a warm discussion among physicians respecting the danger of scurvy from the use of sterilized or pasteurized milk. Many have claimed that pasteurizing does not remove the risk of scurvy, while a few have maintained that even sterilizing the milk by boiling was perfectly safe. Recently, however, several outbreaks of scurvy among infants have been reported which were traced to the use of cows' milk which had been pasteurized at less than 146 degrees Fahrenheit. Laboratory research has shown conclusively that the nutritive principle in foodstuffs which prevents scurvy is destroyed by heating. It is now evident that the only safe plan to be followed in the artificial feeding of infants is to make use of certified milk, that is, cows' milk which has been produced under conditions which insure fredom from harmful contamination. The cows must be tested for tuberculosis by skilled experts, and the methods of obtaining and preserving the milk must be such as will insure the utmost cleanliness and protection from contamination with bacteria from the body of the cow or from atmospheric dust.

When certified or clean milk is temporarily unobtainable, pasteurized or sterilized milk may be used for a time with comparative safety, provided lemon juice, orange juice, tomato juice, or the juice of the sweet turnip is used.

# One Hundred Per Cent Improvement Needed

The late Sir Lauder-Brunton, one of the most eminent physicians of modern times, was decidedly optimistic as regards the possibility for great improvement in longevity, efficiency, and all that pertains to the physical welfare of the race. Upon one occasion, he is reported to have said:

"Of this I am perfectly sure, that there is room for improvement to the extent of something like 100 per cent in all our living conditions; that there is room for an improvement of 100 per cent in the average duration of life; that there is room for an improvement of 100 per cent in the average physical capacity for work; that there is room for an improvement of 100 per cent in the happiness and usefulness of the average life, in the community."

J. H. Kellogg

# Remarkable Trees

An article by H. J. Shepstone with the title "Water Tree of the Sudan," appeared in the *Scientific American* for September 13, 1919, and we quote the interesting account for our readers:

"In the Kordofan and Nuba Mountain provinces of the Sudan is to be found a remarkable tree, known locally as the Tebeldi, which is really the 'Boabab' or *Adansonie digita*. These 'water trees,' as some term them, attain a height of fifty-five feet, and have an enormous girth of trunk up to a height of twenty-five feet or more; above this height their limbs and branches commence, and spread themselves over a large area.

"The extraordinary feature of this tree is that the trunk is by nature hollow, averaging about sixteen feet in diameter. Indeed, they have been seen over eighteen feet across—sufficient if tunnelled, to permit with ease a motor-car or carriage and pair of horses to be driven through.

"In this waterless tract of country the tree is mainly of value for its water-storing capacity, which is utilized in the following manner: A small hole, about two feet across, is made at the top of the trunk, and a man getting inside through this, enlarges and improves the natural cavity, until the walls remain only a couple of inches thick. Then round the foot of the tree the earth is scraped away to form a sort of basin, which, as soon as the rains break, becomes filled with water, which is then poured from leather buckets into the cavity until full. The hole is then sealed up with mud or clay, and the supply kept for use in dry seasons.

"Water thus stored remains sweet for a very long time, and even after a lapse of two years only a slight discoloration is noticeable. The trees are valuable property, and are let and sold with adjacent land. On the main routes through Dar Hanr the natives make a living by selling water to travelers, the usual rate being one piastre per burma (roughly two gallons).

"A great many of the trees are owned by the Government, the number and cubical capacity of each being registered. A case of their extreme utility, or rather necessity, was witnessed in 1916, during the expedition against the late Sultan Ali Dinar, of Darfur, when, at Wad Bunda, about one hundred miles west of El-Nahud, the whole of the mobile column, consisting of some eight hundred camels (each drinking ten to thirteen gallons), sixty horses and mules, and six hundred men were watered solely from Tebeldi trees. Two methods were used, one being the ordinary native way of sending a man up the trees to get the water out by leather buckets and pass it down a rope. This was found to be too slow, and was supplemented by the system of the 'siphon'—a log pipe resembling a garden-hose being inserted into the water through the hole, and the flow started by means of a pump, which was then removed, the water (continuing on its way) was poured into canvas baths, which were filled one after another.

"It was suggested at first that the trees might be tapped like an ordinary beer-barrel at home; but the natives said this would split and ruin the tree, so the idea was abandoned.

"However, the Tebeldi tree is not used for water storage only, as from its bark the inhabitants make strong and serviceable ropes, which are used by them for roping camel-loads, building their houses, and, in fact, for anything that needs tying up or binding.

"In the rainy season the Tebeldi is covered with leaves not unlike those of the sycamore, and affords excellent shade and coolness, an asset by no means to be despised in Africa. It has a large white cone-shaped flower with a red center, but no smell; later on it bears fruit in the shape of a large nut about six inches long and two across, greenish brown in color. Inside the outer shell are about thirty or forty smaller nuts clustered together, each with its own kernels; they are covered with a white powder and are bitter to the taste, with somewhat of an almond flavor. They are used during Ramadan by the natives as a sort of corn flour, being crushed, mixed with water or kisera, and then boiled and eaten. From the smaller outer shells the Nubas make snuff-boxes, which are worn round their waists.

"The age of the trees must be very great, running into centuries. One planted twenty years ago is still tiny—only about four inches across. If one asks the sheikhs and natives (some of them very old), the reply is always the same: that they have never seen any difference in the trees; it is now as it was when they were boys, and much the same in the days of their fathers before them."

# Too True to Be Good

W. P. FRYE

Have you noticed how little attention people pay, even in these enlightened times, to what they eat? How brainy men who are recognized successful business heads, absolutely ignore the matter of proper food?

Recently in a chair lunch I sat beside a very well-known and eminently successful business executive. The day was hot, and I was partaking of whole wheat bread, a glass of milk and some fruit.

I was amazed to note the combination of food this gentleman selected—watermelon, doughnuts, black coffee, ginger cookies, chocolate eclair, orange, cheese. He ate them in the order mentioned. A dietitian might say that this man should be examined for his sanity. On the other hand, this is but an example of a common, everyday occurrence in any restaurant.

The chief dispenser at a soda fountain, located in the heart of a city, opposite a trolley transfer point where thousands of persons stop, informs me that between 7 and 8:30 o'clock about three hundred girls who work in downtown offices and stores, stop in here just long enough to gulp down a cup of coffee and a doughnut or two, or some crullers. This is their breakfast.

Habit and custom do a great deal toward tearing down, as well as building up. I have been told that Swedish people are great coffee lovers, and that they believe in giving it even to infants, and that thus the habit grows with their growth.

I know a man of thirty-five who drinks eleven to fifteen cups of the blackest coffee every day, and frequently goes without solid food for twenty-four hours. He has been doing this regularly for fifteen years. In addition, he smokes at least one box of cigarettes, and often two boxes, each day. And probably this is not an exceptional case. But, what else can be expected when millions of people are being urged, by alluring newspaper and magazine advertising, to smoke all kinds of tobacco preparations and to drink coffee because it is the "national drink"?

It has come to be the case that in any public eating place, a person who does not take coffee or tea and a cigarette with his three meals is a rare exception.

# The Soy Bean

It is interesting to note that the soy bean s rapidly winning its way to favor in this country. Its high nutritive value and especially the superior character of its proein give it a much higher value as a nutrient than is possessed by the native beans of this country. The soy bean has been argely grown in both European and Asiatic countries for hundreds of years, and to some extent in this country, but, curiously, its merits have not been appreciated until recently. More than five hundred varieties have now been tested by the U. S. Department of Agriculture. Twenty varieties are at the present time being handled by growers and seedsmen in this country. The green and yellow varieties are best adapted for food. The black and brown varieties are chiefly grown for forage.

In China, where the soy bean has been grown for more than five thousand years, it is used very little in the manner in which beans are used in this country. Instead, according to W. J. Morse, in the Year Book of the U. S. Department of Agriculture, for 1917, "the beans are soaked in water and roasted, the product being eaten after the manner of roasted peanuts. This method of preparing the beans is improved by soaking the beans for about twelve hours in a 10 per cent salt solution, boiling slowly for about thirty minutes, and then roasting to a light-brown color. The yellow-seeded and green-seeded varieties are preferable, as they make a product of better appearance.

"When soy beans are three-fourths or more grown, the seed makes a most palatable and nutritious green vegetable. As such it may be used much as is the green pea or the Lima bean. The pods are somewhat tough and not desirable to eat. The green beans are rather difficult to shell, but after cooking in the pods for about five minutes they shell out very easily. These beans may also be canned, like green peas, and they thus make an excellent green vegetable for the winter. One large canning company has successfully packed the green soy beans.

Typical Soy Bean Plant

"A few hills of either the green-seeded or the yellow-seeded varieties, in successive plantings, may be grown in the garden as a green vegetable for the summer and fall and for canning.

## Soy-Bean Milk

"If the dried beans (yellow or yellowish green varieties) are soaked for a few hours, then finely crushed (as in a meat

The basket on the left contains sprouted soy beans, which are sold and used as a green vegetable

grinder) and boiled in three times the amount of water as of bean material for about thirty minutes, a milky emulsion is obtained which is very similar in appearance and properties to cow's milk. This liquid, separated out by means of a very fine sieve or through a cloth filter, is the soy-bean or vegetable milk used so extensively in China. Soy-bean cake, after the oil is expressed, or whole soy-bean meal can be utilized quite as well as the whole bean in the manufacture of the milk. When the meal is used, about seven times as much water is added as there is meal, and the mixture is boiled for about ten minutes.

"Soy-bean milk has a rather strong characteristic taste and odor which may be masked by the addition of a small quantity of coumarin or vanillin. This vegetable milk can be used successfully in numerous preparations, such as breads and cakes, and creaming vegetables, in milk chocolate, and in custards. If allowed to remain in a warm place, the milk becomes sour, like animal milk, and in that form may be employed just as is ordinary sour milk or buttermilk. In Japan a concentrated or condensed milk is obtained by evaporating the soy-bean milk in a vacuum. This condensed vegetable milk, though not so light in color, resembles in nutritive value and keeping qualities condensed cows' milk.

"After separating the milk from the solid material, the residue is still very rich in nutritive substances. It can be dried and used for cattle feed or possibly made into a meal or flour for human consumption.

## Soy-Bean Cheese

"The addition of magnesium or calcium salts (about a 1 per cent solution) to soy-bean milk when hot precipitates some of the protein substances, forming a grayish watery liquid. This curd, after being drained and pressed, represents the tofu, or bean curd, which is so extensively eaten and forms the basis of numerous fermented, smoked, and dried cheeses in China and Japan. Tofu is made fresh daily and is a staple article of diet with oriental peoples. In many cities of the United States having a large Asiatic population, fresh bean curd generally may be found in the Chinese markets. Although the fresh curd, or tofu, is tasteless, it is a highly nutritious food, and no doubt could be elaborated by the American housewife into a variety of palatable dishes.

### Soy Sauce

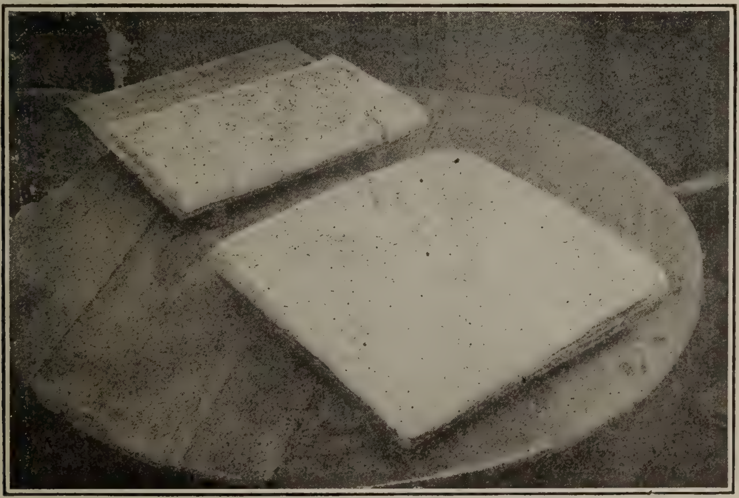
"Soy or shoyu sauce is a dark-brown liquid prepared from a mixture of cooked and ground soy beans, roasted and pulverized wheat (barley is sometimes used), salt, and water. This mass is inoculated with a culture known as rice ferment (*Aspergillus oryzae*) and left in casks to ferment from six months to a year, or sometimes longer.

"In odor and taste this sauce suggests a good quality of meat extract, though perhaps more salty and a trifle more pungent. Soy sauce is largely consumed by the Chinese and Japanese, being used in cooking and as a relish or condiment to increase the flavor and palatability of the diet. This product may well serve as the basis of sauces of the Worcestershire type and as a flavor with many American vegetable dishes.

"The manufacture of soy sauce is conducted on a large scale in China and Japan, and to some extent in India. The yearly production of Japan is said to amount to nearly 2,000,000 barrels. The brewing of this sauce has also become a well-established industry in Hawaii. Although there are no factories in the United States, considerable quantities of the sauce are imported annually, and it can be obtained at Chinese stores in most of our cities.

### Soy-Bean Sprouts

"Several species of beans are sprouted and used as a garden vegetable by the Chinese. Soy beans are used to a very considerable extent for this purpose, as these sprouts are larger and firmer than those of most other legumes. Bean sprouts may be used as a home winter vegetable, for the dried beans are sprouted easily in a short time under proper conditions of heat and moisture. It is quite possible that sprouted soy beans utilized in various vegetable dishes would appeal to the American taste."



Large blocks of freshly-made bean curd, "Tofu," ready to be cut up into squares and sold to the housewife

# Where Is the Honest Miller?

BY THE EDITOR

Diogenes, the old Greek philosopher who lived in a tub, was once found carrying about through the streets of Athens a lighted candle in broad daylight. When asked for an explanation, he declared that he was looking for an honest man.

The numerous articles defending the use of superfine white flour which have appeared within the last few months from sources friendly to the milling interests, present such a medley of perverted facts in relation to the comparative value of superfine white flour and graham flour, we are led to the conclusion that if a modern Diogenes were to set out upon a similar quest among the milling fraternity he would need a searchlight to find the proverbial "honest miller" of ye olden time.

## White Flour a Nutritious but Incomplete Food

Superfine white flour is a wholesome and nutritious food. Nobody denies it. The same is true of polished rice and of skimmed milk, But if the dairymen should set out to convince us that skimmed milk is to be preferred to full milk we should have good reason to suspect their sincerity; and this is just the attitude of the millers. They maintain that skimmed wheat, or superfine white flour, is preferable to graham flour which represents the entire wheat.

We are told by Professor Harry Snyder in the *Northwestern Miller* that "when wheat offal is fed to live stock, the milk, pork, and other returns furnish more food value and a better variety of nutrients than if man attempted to eat the wheat by-products."

The addition of 14 per cent bran, a mixture comparable to graham flour, reduces the digestibility of protein from 91.6 per cent to 85.9 per cent, and reduces the digestibility of carbohydrates from 97.8 per cent to 95.3 per cent. In other words, the digestibility of the protein was found to be 6.03 per cent and of carbohydrates 4.06 per cent less than in white flour. This naturally gives the impression that in the use of graham bread there is a waste of the nutrient elements of wheat, amounting to one pound in 16 of the protein of the wheat, or about one-half pound of protein to the bushel and one pound in twenty-two of the carbohydrate or starch, amounting to about two pounds to the bushel of wheat. But the professor omits to tell us that if the bran had not been eaten but had been fed to cattle, for example the loss would have been still greater; that is, in case only 86 pounds of fine flour had been eaten, the amount of protein digested would have been only 86 per cent of that digested when 100 pounds were eaten. This would amount, in the case of protein, to 78.8 per cent, 7.1 per cent in favor of the graham bread, showing that this amount of digestible protein was obtained from the bran and would have been wasted if the bran had not been eaten. In the case of the carbohydrate, the difference is still greater, amounting to 9.2 per cent. In other words, if one eats his wheat in the form of graham flour instead of in the form of fine white flour, he actually digests and obtains from one bushel of wheat one-half pound more of protein and 4.1 pounds more of carbohydrates.

## How the Millers Are Trying to Deceive Us

Evidently the millers, under the guise of scientific facts based upon chemical analysis and experimental research, are attempting to deceive us by making us believe, because the total protein in graham flour is not digested quite so completely as the total protein in fine flour, that we are, in the use of graham flour, actually wasting good food; whereas the fact is that while the protein of the bran is less readily digestible than that of the fine flour made from the center of the grain, it is, nevertheless, in part digestible and to the extent of more than one-half of the total amount. Certainly half a loaf is better than none. It is better to digest half the protein of the bran and more than half the starch or carbohydrate which it contains than to throw it all away.

The question is not the percentage of the digestibility of the protein of fine flour or the protein of the entire wheat, but how much protein we can get out of a bushel of wheat and how much carbohydrate we can get out of a bushel of wheat. In other words, how much actual food can we obtain from a bushel of wheat in the form of graham flour as compared with the same wheat in the form of superfine white flour? And the answer is afforded by Prof. Snyder's own figures. We get half a pound more protein and four pounds more of carbohydrate from the whole wheat than from the whole wheat minus the bran.

## Enormous Waste in Feeding Bran to Stock

But the professor goes still farther away from the solid ground of fact when he tells us that "when wheat offal (bran) is fed to live stock, the milk, pork, and other returns furnish more food value and a better variety of nutrients than if man attempted to eat the wheat by-products." In the light of the facts published by Professor Graham Lusk and others, this is a most astonishing statement. Is it possible that the professor is unaware of the fact that carefully conducted experiments, both in this country and in Europe, have shown that when digestible food substances are fed to hogs, the return in edible pork amounts to one pound for every 15 pounds of the digestible foodstuffs fed to the hog, and in the case of sheep and beef cattle the waste is still greater, the return being only one pound for every 33 pounds of digestible nutriment fed to the animal. In other words, notwithstanding the fact that the digestive organs of pigs and cattle are able to extract more nourishment from bran than we are able to do, the economic waste in taking bran, as well as other foods, at second hand by passing it through the body of an animal is so enormous that the amount we get back after feeding the bran to a pig or a sheep is only a small fraction of what we are able to obtain directly from the bran.

Professor Snyder's figures, analyzed, seem to show that if we ourselves eat the bran of a bushel of wheat along with the other nutritive elements of the wheat, we obtain more than four pounds of nourishment, whereas if we feed the bran to a pig we could not possibly get back more than half a pound, and when we feed it to a sheep or an ox the highest possible return is less than half a pound. In short, we get eight times as much food from the bran if we eat it ourselves as it is possible to get by feeding to live stock.

## Bran is Rich in Lime, Iron and Vitamins, Which are Lacking in White Flour

But we must not forget that bran contains something more than protein, gluten and carbohydrates, or starch. The invaluable lime, iron, phosphoric acid, etc., are almost wholly found in the bran of the wheat, and the highly essential vitamins, while abundant in bran, are altogether lacking in the white flour, and animals fed on white flour soon die a most miserable death from polyneuritis, with painful swelling of the joints and complete paralysis of nearly all the muscles of the body. Numerous experiments have shown that the results of feeding with fine flour are essentially the same as those that follow feeding with polished rice.

In the United States and other countries where superfine white flour bread is largely used, early decay of the teeth has come to be almost universal. In this country we are actually threatened with becoming a toothless race. The progress of dental decay has been particularly rapid within the last 50 years, and with each advancing year is becoming more and more in evidence, in spite of the efforts of 50,000 dentists to save us from becoming toothless. If the millers had busied themselves with the promulgation of Sylvester Graham's great discovery of the importance of utilizing the whole grain instead of spending their energies in inventing machines for robbing the noble cereal of its finest elements, this great destruction of the teeth might perhaps have been prevented.

Virchow, one of the greatest scientists of modern times, Professor Sherman of Columbia University of New York, Drs. Bunting and Rickert of the Department of Dentistry of the University of Michigan, and other investigators, have shown that the American people, as well as those of some other countries, are suffering from lime starvation.

## Fine Flour Bread the Cause of Teeth Decay

Lack of lime in the food is unquestionably one of the greatest causes of the universal dental decay which is seen in this country, and there can be no doubt that the millers who rob the wheat of its lime and the profesors who defend this denaturing of our most important food staple are chiefly responsible for the enormous suffering and expense resulting from dental decay.

This fact is emphasized when we note that the bran removed in the making of white flour carries with it nearly one-half of the total lime content of the wheat. In the case of iron, the loss is still greater. Entire wheat contains approximately 22 grains of food iron to the bushel, whereas white flour contains only 4.4 grains, or one-fifth as much. In other words, with the removal of the bran the iron contained in the wheat is lost. It is to be noted, too, that if the bran is fed to livestock, both the lime and the iron are irretrievably lost, for the lime is deposited in the bones of the animal, which are not eaten; and the iron is lost in the blood, which escapes when the animal is killed.

## How the Millers Are Bleeding Us

A study of a large number of average dietaries show that they are exceedingly deficient in lime and iron, particularly in iron. In many instances the amount of iron found in the daily ration is less than half the normal requirement. It appears, then, that the millers, in forcing fine flour upon us and beguiling us into the notion that it is superior to the fine product with which Nature supplies us, are not only robbing us of our teeth but are also bleeding us to death by robbing us of an important source of food iron, which is as essential to our physical well-being as the air we breathe.

Let us start a nation-wide search for honest millers who will make for us the old-fashioned graham meal which Sylvester Graham, the great apostle of food reform in this country, and a worthy ancestor of our noted physiologist, Dr. Graham Lusk, of New York City, so eloquently and ably advocated with voice and pen in the forties of the last century, and in so doing builded himself a monument represented by the bread bearing his name which has been made and eaten as the result of his efforts, vastly greater than any monumental pile reared to any man who ever lived.

## The Millers' Insidious Campaign Against the Public Health

The campaign which the millers are carrying on throughout the country in behalf of superfine white flour bread is not a missionary project in the interest of race betterment, but is an insidious attack upon the health and the comfort and even the lives of American citizens. It can be supported only by a shameful deceptive misapplication of scientific facts, and it is in the writer's opinion surprising that the experts of the United States Agricultural Department in Washington, whose eyes must be fully opened to the facts set forth in this article, do not undertake a vigorous counter-campaign of education to warn and enlighten the American people against the evils of fine flour bread and the malicious designs of unscrupulous millers and the false prophets among college professors who make commerce of their professional knowledge and reputation in the interests of unscrupulous profiteers.

It remains to be said further that the digestibility of a food is by no means its only or even its chief virtue. Nutritive qualities stand much higher in the scale of food virtues than does mere digestibility. Gelatin is very easily digestible and yet a man or an animal fed on gelatin would inevitably starve to death. The same is true of starch and sugar. Even indigestibility is a quality which contributes in no small degree to the maintenance of young and continuous health. The alimentary canal of human beings is so constructed that it requires the stimulus of a considerable amount of indigestible residues to promote the necessary degree of peristaltic activity. It is the duty of the alimentary canal to dispose of food residues and body wastes as well as to digest and absorb the nutritive elements of the food.

### Bran Necessary as a Laxative

Man is by nature a vegetable feeder rather than a consumer of flesh. All physiologists agree that he belongs to the great family of primates and is classed with the orang-outang, chimpanzee and other anthropoid apes in his anatomic and physiologic relations. The normal foodstuffs of the animals in this class contain a large amount of cellulose, the function of which is to secure prompt dismissal from the body of the putrescible body wastes and food residues. Every farmer knows the value of bran as a promoter of peristaltic activity. But unfortunately he uses his knowledge only for the benefit of his horses, cows and pigs, having been so thoroughly misled and deceived by the millers and their pseudo-scientists that he actually believes that the thing which is most excellent, almost essential for the maintenance of his health, is pernicious, even dangerous, for him. The farmer needs to learn that bran is as useful and as necessary for himself as for his horse.

# Thomas Carlyle on Health

Thomas Carlyle had dyspepsia all his life. It made him sarcastic and crabbed. It perverted his judgment in many things; nevertheless he was aware of the fact, as appears from the following delightful paragraphs from his Inaugural Address on being installed as Rector of the University of Edinburgh:

"Finally, Gentlemen, I have one advice to give you, which is practically of very great importance, though a very humble one. In the midst of your zeal and ardour,—for such, I foresee, will rise high enough, in spite of all the counsels to moderate it that I can give you,—remember the care of health. I have no doubt you have among you young souls ardently bent to consider life cheap, for the purpose of getting forward in what they are aiming at as high; but you are to consider throughout, much more than is done at present, and what it would have been a very great thing for me if I had been able to consider, that health is a thing to be attended to continually; and that you are to regard that as the very highest of all temporal things for you [*Applause*]. There is no kind of achievement you could make in the world that is equal to perfect health. What to it are nuggets and millions? The French financier said, 'Why is there no sleep to be sold!' Sleep is not in the market at any quotation [*Laughter and applause*].

"It is a curious thing, which I remarked long ago, and have often turned in my head, that the old word for 'holy' in the Teutonic language, *heilig,* also means 'healthy.' Thus *Heilbronn* means indifferently 'holy-well' or 'health-well.' We have in the Scotch, too, 'hale,' and its derivatives; and, I suppose, our English word 'whole' (with a 'w'), all of one piece, without any *hole* in it, is the same word. I find that you could not get any better definition of what 'holy' really is than 'healthy.' Completely healthy *mens sana in corpore sano* [*Applause*]. A man all lucid, and in equilibrium. His intellect a clear mirror geometrically plane, brilliantly sensitive to all objects and impressions made on it, and imagining all things in their correct proportions; not twisted up into convex or concave, and distorting everything, so that he cannot see the truth of the matter without endless groping and manipulation: healthy, clear and free, and discerning truly all around him. We never can attain that at all. In fact, the operations we have got into are destructive of it. You can not, if you are going to do any decisive intellectual operation that will last a long while; if, for instance, you are going to write a book,—you cannot manage it (at least, I never could) without getting decidedly made ill by it: and really one nevertheless must; if it is your business, you are obliged to follow out what you are at, and to do it, even at the expense of health. Only remember, at all times, to get back as fast as possible out of it into health; and regard that as the real equilibrium and centre of things. You should always look at the *heilig,* which means 'holy' as well as 'healthy.' "

# The Taste for Pickles An Acquired One

One evening, soon after we left Shestakova, they (Korak drivers) happened to see me eating a pickled cucumber; and as this was something which had never come within range of their limited gastronomical experience, they asked me for a piece to taste. Knowing well what the result would be, I gave the whole cucumber to the dirtiest, worst-looking vagabond in the party, and motioned him to take a good bite. As he put it to his lips, his comrades watched him with breathless curiosity to see how he liked it. For a moment his face wore an expression of blended surprise, wonder and disgust which was irresistably ludicrous, and he seemed disposed to spit the disagreeable morsel out; but with a strong effort he controlled himself, forced his features into a ghastly imitation of satisfaction, smacked his lips, declared it was "akhmael nemelkin"—very good, and handed the pickle to his next neighbor. The latter was equally astonished and disgusted with its unexpected sourness, but rather than admit his disappointment and be laughed at by the others, he also pretended it was delicious, and passed it along.

Six men in succession went through with this transparent farce with the greatest solemnity; but when they had all tasted it, and all been victimized, they burst out into a simultaneous "ty-e-e-e" of astonishment, and gave free expression to their long-suppressed emotions of disgust. The vehement spittings, coughing, and washing out of mouths with snow which succeeded this outburst, proved that the taste for pickles is an acquired one, and that man in his aboriginal state does not possess it.
—*"Tent Life in Siberia," by Geo. Kennan.*

# The Easy Diet

*The Medical Record* publishes an interesting paper, from the pen of Dr. Cornwall, on the easy diet, from which we quote the following paragraphs:

"Different articles of food may resemble each other in their content of food principles, and from the point of view of quantitative dietetics be equivalent; but from the point of view of what happens to them and in consequence of them in the body, they may show differences which are important in respect to the easy diet. Boiled spinach and boiled cabbage may appear as green vegetables of similar composition, but their behavior during digestion may bring out marked differences; the latter belongs to a small list of vegetables which are rendered more indigestible or more disturbing to the alimentary tract by cooking. Milk sugar and cane sugar supply the same number of calories, weight for weight, and both belong to the same group of disaccharides; but they may act and be acted upon somewhat differently in the body; the former is more susceptible to fermentation by the lactic acid bacteria, and the latter by the yeast bacteria. An ounce of cottage cheese and an ounce of lean steak contain the same amounts of protein, and the same kinds of protein; but they are by no means of equal value in the easy diet. The former is free from protein waste and, to a certain extent, is protected from putrefaction; while the latter contains appreciable quantities of the extractives and purin bodies and is particularly susceptible to putrefaction.

"Bearing in mind the fact that one article of food is not necessarily as good as another in the easy diet, although analysis may show it to contain apparently the same food principles, the problems of dietotherapy are seen to require for their solution a knowledge of the composition and qualities of the pathological reactions which they excite after ingestion.

"For the selection of protein-containing articles of food for the easy diet, a simple and useful criterion is found in the way the articles spoil. Practically all protein-containing articles of food, when they spoil, either turn sour or putrefy. Bread, cereals, fruits, green vegetables, roots, and milk sour, while animal flesh and eggs putrefy. the line of cleavage seems to run strictly between the animal and vegetable kingdoms until we come to milk, which alone among protein-containing foodstuffs regularly sours when it spoils. The souring of these articles, which is usually caused by the lactic acid fermentation of the carbohydrate which they contain, tends to inhibit the activity of the putrefactive bacteria, which in general are most active in an alkaline medium. The practical bearing of these facts on the easy diet becomes apparent when we remember that the split protein products which result from the putrefaction of protein are sometimes toxic and always burdensome to the organism. They also point to milk as the ideal source of protein in the easy diet. Nature knew what she was about when she invented milk for the easy diet of infants; and we may profit by the lesson suggested.

"The easy diet, broadly considered, is seen to be lacto-vegetarian or approximately lacto-vegetarian. But, in so characterizing it, I must warn against being mislead by a name. Any lacto-vegetarian or approximately lacto-vegetarian diet is not necessarily an easy one. The various articles of vegetable origin, as well as the milk preparations, in order to be acceptable in the easy diet, must be selected with due regard to general reactions which take place between them and the organism, as well as the special reactions which belong to the particular case. Cane sugar, for example, is a hard food, and finds little place in the easy diet. Mushrooms and ripe peas and beans are vegetables of particularly bad repute as regards the easy diet.

"In connection with the easy diet the matter of idiosyncrasies and special sensitizations come up. Not only articles of general poor esteem in the easy diet, such as the various flesh foods and eggs, produce these metabolic disturbances, but also articles which occupy a high place among easy foods, such as cheese, milk, and oranges, may produce them. Fortunately these idiosyncrasies and special sensitizations are much less common in the case of the recognized easy foods, excepting possibly cheese of the rennet-made types (not the sour-milk cheese), than in the case of flesh and eggs, which are recognized as hard foods. The idiosyncrasy in regard to milk is sometimes a psychic one, but often it is merely a difficulty of digestion which can be overcome by modifying the milk so as to prevent its rapid curdling in large masses in the stomach. Simple likes and dislikes, personal prejudices and whims, and dietetic habits must not be confounded with idiosyncrasies and sensitizations. Here I would like to state that people can readily be taught to eat and like the right things. Eating is largely a matter of habit."

# The Cause and Cure of Bright's Disease

BY THE EDITOR

The causes of Bright's disease are manifold and the cure is prophylaxis. That is, Bright's disease can be easily cured before you get it, and there are a thousand different ways of getting it.

The kidney is an organ through which certain kinds of poisons are removed from the body. Poisons carried off through the kidney are of two kinds, chiefly the protein waste substances. Protein, the common name for which is albumen, includes the white of egg, the lean of meat, the gluten of wheat, the casein, or curd, of milk and cheese. Taken into the body, it is not burned up and converted into carbon dioxid gas as are starch and sugar, but rather into invisible gas, that passes off through the lungs and is easily disposed of.

When fat is oxidized it is converted into carbon dioxid and water. When you burn a candle you have no ashes left. The tallow, or wax, burns up completely and passes off into the air as an invisible gas. What happens to the tallow when you burn it in the candle happens in the body. If you had a piece of meat burning in the room, or a piece of horn, or a bunch of hair, it would be a very different thing. You would have some bad smells about. Even woolen cloth burning makes a bad smell.

## Meat Poisons

Meat and protein burning in the body produce various noxious poisons and ill-smelling substances. The same thing happens if the meat decomposes. Vegetable foods ferment. They undergo a process that we call decay, but this is a process of fermentation and of molding carried on by yeasts and molds. It is not decay in the sense of putrefaction. A potato will not putrefy. An apple will rot, not putrefy; but a dead cow or a dead rat, a beefsteak, a chop, a roast, or bologna sausage, lying about in a pantry, a meat shop, a corner of the fence, or in a person's colon, will undergo putrefaction, and in the latter case the poisons will be absorbed into the body.

These poisons are eliminated by the kidneys. That is the only way they can get out of the body except they be carried off through the bowels. The liver does all it can to destroy these poisons. It does destroy a large proportion of them, and converts the surplus albuminous substance into urea. The part that undergoes putrefaction cannot be converted into urea.

The liver does what it can to distoxicate it. It converts the horrid smelling indol into indican, which has no odor at all. It combines indol with sulphuric acid, or acetic acid, or gluconic acid, or combines it with carbohydrates and in that way renders it, to a large extent, non-poisonous, so that the kidneys are able to carry it off. One authority says we have about three million kidney cells, and it is their duty to carry off the poisons that are naturally produced in the body.

### The Kidney Eliminates Acid Wastes

The bile is alkaline. The urine is acid. The bile carries off the alkaline substances, the metallic substances pass off through the colon, especially the lower half, but the acid wastes of the body go off through the kidneys.

In a great majority of cases of Bright's disease the trouble is produced by the kidneys having too much work to do. A kidney has a certain capacity for work. It may be compared to an automobile tire that can run five thousand miles if well cared for. The kidney has seventy-five, eighty, or one hundred years of work in it. If we make our automobile tires wear out early by putting the brakes on when going very fast and by skidding the car—if we abuse them in this way, they won't run 5,000 miles. Perhaps they will run only 500 miles.

It is the same way with the kidney. A man who smokes, for instance, loads his kidneys down with nicotine. Nicotine is a poison which the kidneys cannot eliminate completely, and normally do not eliminate. When a man drinks alcohol the kidneys have to carry it off. It won't do to allow it to remain in the blood, because it poisons the cells and the kidneys, and they labor hard to eliminate it. If one drinks tea or coffee, the caffein is a poison which damages the body cells, and the kidneys labor hard to get rid of it.

### The Monkey Knows What to Eat

I recently received a monkey. It recognized me as a friend, a brother, and extended its hands. I gave it a strawberry. The monkey had just come from Africa, and I presume had never seen a strawberry before. It reached out its hands instantly and seized the berry. It looked at it, smelled of it, tasted it, then its eyes sparkled and immediately that strawberry disappeared. It recognized the strawberry at once as a source of joy and delight and wholesomeness. Then I gave it a leaf of lettuce. It took the leaf, laid hold of it with both hands, smelled it, and in ten seconds the whole leaf of lettuce had disappeared. It recognized the banana immediately. It didn't have to be introduced. It stripped off the skin and proceeded to engulf it. The monkey knows what is good for it.

I envied that monkey as I sat watching it and saw that it had the power to select the things that are wholesome for it. It doesn't have to send food to the laboratory to have a chemist make an analysis to see whether it is good or not; it has the power within itself to examine the food and determine at once whether it is adapted to its body needs and is wholesome to eat or not. We used to have monkey sense, but we have lost it somewhere along the road that we have been traveling during the last two or three hundred thousand years, so that we do not seem to know anything about what is good for us. We can only tell by watching what happens. If you gave a monkey a poisonous mushroom, there wouldn't be any danger of its being poisoned by it. He would not eat it, but a man would be just as likely to swallow the poisonous one as the one that was not poisonous. You do not catch a monkey in any such catastrophe as that, for the monkey knows good food from bad food. Put a little pepper in his food and he doesn't want anything to do with it, but half the people in the world haven't as much sense as the monkey has with reference to pepper. I have introduced this monkey to assist me in teaching dietetics.

### Unwholesome Foods Wear Out the Kidneys

Because we eat and absorb those poisons that do not belong in our dietary at all and that the kidney ought never to be troubled with, these organs get worn out long before their time; and when a man originally has kidneys good enough to last 100 years, he wears them out perhaps in twenty years. One may overtax the kidneys by a sedentary life. When one exercises out of doors and takes plenty of air into his lungs, he takes into his lungs five to ten times as much air as when he is sitting still. The result is that the blood is purified and the waste matters are burned up. You know if you have a very slow fire in the stove and a poor draft, there will be a lot of unburned cinders left. That is exactly what a great many people have, because they do not take exercise enough to get up a draft and an abundance of air going through their bodies. There are cinders left behind, imperfectly burned food which is scattered all through the body, and the consequence is the body is clogged, the brain is clogged.

### Exercise Burns Up the Body Cinders

You feel fine after a walk on a frosty morning almost as though you had risen into another state of being. It is like a translation, the uplift one gets from a brisk walk in the keen frosty air. It is simply because you have been burning up your cinders. A day or two ago a gentleman said to me, "I have been out for a couple of hours' exercise and I have got rid of the cobwebs." His brain was keen and alive and he didn't feel half dead, as he did before he went out. He had burned up the cinders. His blood was clean and his tissues had been purified.

### The Sedentary Man and the Sedentary Horse

The sedentary man is like the sedentary horse. I have been using this illustration about forty years and it is getting out of date, for we haven't the old family horse any more; but when the old family horse that we used to have was first taken out in the spring and got his first sweat, his back was all covered over with a white froth. If you did not wash him off when you got back, but left him till the next morning, you found his hair all stuck together with a sort of gum and there was a bad odor to the dust that came off his back. That material is extract of horse. It is the perspiration brought out of the horse, the waste matters that have been accumulating in his body. After the horse was driven a few weeks, the perspiration that came out upon his skin did not leave that white sediment behind it. It was limpid like water. Now let a sedentary man get into a sweat, and if you are within a few feet of such a person. it doesn't require your eyes to tell you that you are nearby somebody. That is extract of sedentary man. His body is full of waste and poisonous materials. Why have these materials accumulated in his body? Because the kidneys had more work to do than they could possibly do. Because the man did not exercise and burn up his waste material properly. So much work was imposed upon the kidneys that they could not do it all, and they allowed the body to become saturated with these waste matters. That means his kidneys will get Bright's disease and be worn out at an early day because he compels them to do work they were never intended to do, to care for waste matters that ought to be burned up. His body is choked with cinders,

### A Bread and Meat Diet

Suppose our sedentary man lives largely on a diet of beefsteak and bread and butter and coffee. It is astonishing how many people are living upon that sort of diet. In the beefsteak he gets uric acid, fourteen grains to every pound. In the bread he gets an excess of phosphoric acid. These two things put together load his body with acids. And in the butter he is almost certain to get some butyric acid in excess, so his body is loaded up with these acids, and the kidney has so many acids to eliminate that by and by it gets worn out.

### The Cause of the Albumin in the Urine

If you put a piece of kidney in a glass of water, to which has been added a few drops of acid, leave it there over night, then put it in a test tube and boil it, you would say that it was a case of Bright's disease. There is albumin in the water. The kidney has been, in part, dissolved by the acid.

That is what happens when the tissues of the body become too acid. The blood contains too much acid, and the kidney has to filter it out. These acids, passing through the kidney, dissolve the kidney substance after a while, and the dissolved kidney substance being carried away is a source of albumin in the urine; at least this is the explanation given by Professor Fisher, the eminent physiologist of Cincinnati, and he is no doubt right about it.

If this process continues, the cement substance, which is being dissolved in this way, is, after a time, carried away in such quantites that the kidney fails, and part of the fragments get into the urine, making casts. Casts mean that the kidney substance actually is being carried away, becoming disintegrated, in consequence of the large quantity of acid substances that are carried through it. This is the way in which people get chronic Bright's disease.

### How Infections Cause Bright's Disease

A child has scarlet fever and the poison produced is so deadly a poison that on its way through the kidneys they are damaged. A worse effect is produced upon the kidney than upon any other tissue because the poison is concentrated there, so, by and by, the child has blood, albumin and other symptoms of imflammation of the kidney. That damages the kidney and the child when thirteen or fourteen years of age, if it lives as most people do, will begin to show symptoms of Bright's disease, because the kidney has been so damaged that it has not the ability to stand the wear and tear of ordinary life and so is worn out sooner. When one has typhoid fever and high temperature with intense intestinal toxemia, and the tongue is coated and the whole body is saturated with poisons, the kidney is damaged in the same way. Smallpox, chicken pox, every infectious disease, may have the same effect upon the kidneys.

When a person has had any infectious disease, it may be taken for granted that he has damaged kidneys.

Another disease from which nearly all people suffer more or less is tuberculosis. Tuberculosis produces one of the most virulent poisons known. When this is carried out through the kidney, that organ is damaged to such an extent that when one dies from tuberculosis he does not die usually because the lungs are worn out, or are so involved that he has not enough lung capacity to keep him alive; but he dies because his kidneys and his liver are worn out.

### Tuberculosis and Bright's Disease

Many people get well in sanitariums for tuberculosis and go home pronounced cured, only to die two or three years later from Bright's disease. The kidneys are worn out.

However, the kidney has such a surplus of power, such a large margin of safety, that one who is not as yet affected with Bright's disease, generally has enough margin left to carry him through an ordinary lifetime, with good care. This is true not only of the kidneys, but the liver, the heart, the stomach, and all the various organs of the body. An interesting experiment was made on a dog. Two tubes were put into the dog's stomach and two thousand quarts of water were passed through it. Upon examination the water was found to have digestive power sufficient to digest four dogs as big as the dog himself. So you see the stomach has an immense reserve capacity. That is why we have been able to abuse our stomachs so much and still be alive.

### Take Good Care of What You Have Left

The amount of work required of one living the normal life is comparatively small—scarcely one-fourth that required of the ordinary man living on the ordinary diet. So if you have one-half of a kidney left, you will still be able to live. Some years ago a physiologist took a dog, removed a half of one of its kidneys, then after the dog had recovered from the operation, he removed the entire other kidney, which left the dog with only half a kidney. The dog went on as though nothing had happened to him. He remained in perfectly good health, showing that a dog can live with half a kidney. I have known a number of people doing normal work who did not have as much as half a kidney in a healthy condition.

So the important thing is to be forewarned and fore-armed. Eliminate tea and coffee, beefsteak and meats of all sorts. It is not so much, after all, what is in the meat as what happens to undigested fragments of it undergoing putrefaction in the colon and polluting the body. Drink plenty of water, and do not live too much on a diet of bread or cereals, if your kidneys are affected. Make the diet consist largely of fruits and vegetables, because these are most natural to the body and help the kidneys, while cereals contain an excess of acid.

# Sanitation in Ancient Times

The Levitical Laws, as codified by Moses, constitute the first organized effort to apply the principles of hygiene. District health officers were appointed in Rome in 495 B. C. The Cloaca Maxima, constructed in Rome centuries before Christ, and also their aqueducts, give evidence of their having recognized the necessity for sewage disposal and for the securing of their water supply from uncontaminated sources. However, it was not until 1847 A. D. that the first health officer was appointed in England. Think of this regnum of over two thousand years!

This apparent suspension of public health activities was in a large measure due to superstition and doctrinal delusion. The ancient Israelites regarded plagues and pestilence as visitations of divine wrath, and this superstition was unfortunately handed down through the centuries of the Christian era.

# How We Hear Musical Sounds

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The mechanism of hearing, like that of sight, is still much of a mystery. However, some things are known, and more problems are being solved. For example, t is known that sound is produced by condensation waves in the air which are transmitted to special nerves in the ear having for their function the power to distinguish musical vibrations. It has been, however, difficult to understand how the nerves of the ear transmit to the brain so many as 40,000 or 50,000 vibrations per second. An explanation of this is given by D. Fraser Harris in *Nature,* and the article was quoted in the *Scientific American Supplement* of April 12, 1919, as follows:

"Although the pitch of a particular tone is, say, 640 d. v. per second, it is not necessary that, in order to recognize it, we should listen to that tone for a whole second of time. Professor McKendrick many years ago demonstrated that we could recognize as distinct from its predecessor and successor a note in a musical composition, if it were listened to for only 1/64th of a second. In such a case this would mean that only ten condensations would affect the organ of Corti, and presumably only ten nerve-impulses ascend the auditory nerve. Professor McKendrick, with whom it was my privilege to be associated at that time, studied the surface of the wax-cylinder records of musical compositions recorded for reproduction by the phonograph.

"Since the speed of rotation of the cylinder was known, the number of impressions in the wax corresponding with each of a series of tones could be ascertained; and it was found that, in order to recognize any given tone, it was only necessary to 'hear' that tone for not longer than 1/64th of a second. If I remember correctly, a shorter period still was in some cases demonstrated to be sufficient.

"Now if, say, 1/100th of a second is long enough, it is clear that the hearing of quite high tones could be effected by a comparatively small number of vibrations or disturbances in the internal ear and of subsequent impulses in the nerve.

"A tone of 2,000 d. v. per second could be recognized by 20 impulses, and one of 10,000 pitch by 100, and so on. Apparently the auditory nerve is competent to transmit individual impulses of that order of frequency.

"It seems to me that attention to this point will make the problem of hearing rather simpler than at first it appears, by removing the necessity for believing that, in order to appreciate a note of a given pitch, we require to have the auditory nerve transmitting the large number of impulses corresponding with the large number of vibrations which, according to physicists, is the pitch or number *per second* of that note. In other words, the different tones in a musical composition follow one another with such rapidity that no particular note is produced for a whole second, and, therefore, not perceived for a whole second.

"But, on the other hand, it is clear that we can listen to a high-pitched note for a second or for a minute or for any length of time. When we are hearing a note of 20,000 d. v. per second pitch, we are almost certainly *not* receiving 20,000 impulses per second into the central nervous system. To take an analogy from vision: when we perceive red light, we are certainly not receiving anything like ($395 \times 10^{12}$) impulses per second, which is the 'pitch' of red light. If, in seeing colored light, such an enormous number of vibrations in the æther affect the retina, there must be something of a very different character as regards frequency which so stimulates the visual center that we see colored light.

"We have in perceptual consciousness qualitative differences corresponding with objective quantitative differences, an ever-present problem of psycho-physics; and no one has ever suggested that our optic nerves and visual centres are dealing with impulses at many millions a second. Why, then, may we not apply the same reasoning to the ear?

"When we are listening to all possible tones from, say, 1,000 d. v. per second pitch to 40,000 may we not somehow have in consciousness qualitative differences corresponding with objective quantitative (arithmetical) differences? We cannot, apparently, be more definite than this.

"In the case of the eye there is no conceivable possibility of an identity between the rhythm of optic-nerve impulses and that of the vibrations of the æther; is it not by analogy probable that neither is there any direct correspondence between the auditory nerve-impulses and the periodicity of sonorous vibrations?"

# Flesh-Abstaining in India

So much has been said about the feebleness of rice-eaters and the necessity for a flesh diet to maintain racial vigor and fecundity, that our readers will be interested in the following article by an Indian official, A. C. Newcombe, B. A., which recently appeared in an English magazine, the *Vegetarian Messenger and Health Review:*

"For vegetarians to say, as they sometimes do, that the natives of India do not eat meat is as misleading as the opposite statement with which they are sometimes met. What may safely be asserted is that in India there are millions of examples of the efficiency of a vegetarian diet. Among the Sikhs especially, and among other races, there are splendid speciments of powerful men who have never tasted meat; and among the Bengalis, Gujeratis, and Deccan Brahmins there are millions whose diet is purely vegetarian, and who, though physically inferior, are mentally superior, and are successful as traders, lawyers, editors, bankers, accountants, clerks, and medical men.

"Differences of physique are due, of course, not to diet only, but largely also to habits, social customs (such as very early marriages), heredity and climatic influences.

"Those who live on rice raise it and other crops with little exertion; the climates are relaxing, and there is much fever and liability to enlargement of the spleen. No wonder their physique is not of the best. So, when we are told that the natives of India who live on rice are effeminate and wanting in vigour and health owing to their diet, we may reply that, though this statement may be to some extent true of some of the people of the South, the results are not necessarily due to diet, and that there are millions of others who live also on a vegetarian diet, but one of wheat and pulse instead of rice, and that those millions are of fine physique and vigour.

"Let those who doubt that the majority of Hindus and many Mussulmans are vegetarians study the statistics, and they will see that, were the edible live stock much used as food, the industries of the country would come to a standstill, and there would soon be no cattle to eat, and, as a consequence, no other food either.

"In an article in a magazine called *East and West,* a native writer stated that "our non-beef-eating Hindu race is dying, while our beef-eating Mahomedan brethren are increasing. Here we have something we can immediately bring to the test. The census of 1911 shows that, in the ten years preceding the war, the Mahomedans increased by four millions and the Hindus by ten millions. The Sikhs are physically the finest race in India. I was several times stationed in the Sikh country, and travelled through the towns and villages, with the advantage of being able to talk with the people in their own language. Careful inquiry among the headmen and others led me to conclude that 70 per cent of the Sikhs eat no flesh.

"In my first year of service I was stationed near a large Sikh village in the interior of Punjaub. An interesting incident happened within a few days after my taking up my abode in the Irrigation Canal bungalow. It was a visit from about twenty Sikh headmen of the villages in the neighbourhood. They all rose on my going out to see them, and offered rupees for me to touch in acknowledgment of their salute. Their dignified bearing and polite manner were difficult for me, young as I was, to deal with. Sikhs do not cut their hair, and these men had masses of white hair and beards. As a group they made a striking picture. They explained that they had come to see me, not so much because I was the new Sahib, but because I was 'one of themselves'—*i. e.*, an abstainer from flesh-food.

"In raising the enormous quantity of cereals, pulse, and other foods, and the cotton crop, indigo, etc., the bull and the buffalo are used to do the whole of the ploughing, to draw the water from the wells for irrigating the fields, and for carting the produce to market. Railways and irrigation by canals have brought new tracts under cultivation. The demand for the labour of the oxen is, therefore, on the increase. Food for the cattle also must be raised and stored, for, during part of the year, the scorching sun renders the land brown and parched. In the Bombay Presidency alone about three million oxen and bull buffaloes are employed for ploughing; and there are three million cows and cow buffaloes, and two million young ones.

"In the Punjaub, one of the most progressive Provinces, the chief crops are wheat, millet, pulse, maize, barley, sugar-cane, oil-seeds and cotton; nine or ten million acres are under wheat alone. Half the wheat is irrigated, *and nearly all grown without manure.*

"The amount of work done by the cattle is enormous and indispensable. No wonder the cultivator speaks of the bull as his 'brother,' for without him the crops could not be raised. In the sacred city, Amritsar, in the Punjaub, the bulls may be met in the narrow streets wandering about ownerless, and as free to jostle their way through the crowd as any other pedestrians. They are often seen with garlands round their necks, and are quite friendly towards strangers. I once saw in a street in Amritsar a bull walk in at the open door of a house. The whole family of Sikhs, sitting in a circle on the floor, rose and made way for the animal to take what place he chose. About the year 1870, such was the indignation aroused in Amritsar at the slaughtering of bulls for food for Europeans and Mahomedans, that one night all the Mahomedan butchers were killed.

"It is hardly likely that any of the 225 millions of agriculturists ever think about the proportions of nitrogenous and starchy or other constituents of their meals. They seem to get the proper elements in fairly correct proportions just naturally. In the North the chief foods are corn, millet, pulse, milk and butter. Condiments are used, and, when available, vegetables and fruit are much appreciated. In the South the same things are eaten, except that rice is much used instead of wheat and millet.

"The Hindu of caste is, in nearly every case, vegetarian. Mahomedans in the villages and interior are vegetarian *as a rule,* but from necessity only, as they will eat meat when they can get it. So also will very low caste Hindus and the men of no caste. Jains and Buddhists are vegetarian.

"As a vegetarian I never had any difficulty as to choice and variety. In a few places in India delicious fruits can be got—*e. g.*, in Bombay, where one finds in the market the best of plantains and bananas, custard-apples, guavas, grapes, mangoes, pomegranates, pineapples, melons, and loquats—some all the year round, and some only when in season. Up-country, fruit is rare, and one may travel hundreds of miles and find that it is almost unknown, or very scanty and poor in the villages. As in thousands of villages in India vegetables and fruits are rare, it might be useful to encourage, through the headmen, the growing of more of the native kinds.

"The Mahomedans and low-caste cooks make delightful mixtures of vegetables, cereals and pulses, curries and other things, and serve them as a rule, very well. An excellent dish is made of *dhal,* or Indian lentil; and there are some vegetables such as the egg-plant and lady's-fingers, not known in England, but much liked by Europeans With porridge, milk, butter, cheese, good wholemeal bread, native vegetables, the fruits of the country, and the tinned and boiled and dried fruits from England there was no need for flesh-food. The sustaining powers of such foods could not be doubted in the presence of the powerful native workers everywhere in evidence.

"Members of the Salvation Army are much respected, as the native thinks highly of men who deny themselves. Schwartz, a successful missionary of Trichinopoly, lived simply and abstained from flesh-food, and in that way attracted the liking of the natives. Another vegetarian missionary, the Rev. W. D. Etherington, of Benares, was successful for the same reason. No doubt many a native is repelled from Christianity as soon as he knows that the Christian missionaries eat animals, and especially the bull."

# Good Eggs and Bad

The U. S. Department of Agriculture has published several interesting bulletins on eggs which present much valuable information. It is shown that one in twelve of sound-looking eggs contains germs. Eggs with dirty shells are much more likely to contain germs than clean eggs.

Among the characteristic of good and bad eggs are the following:

"The white of a strictly fresh egg is stiff and the yolk stands up firmly; as the egg ages, the white becomes thinner, the yolk flatter and the vitelin membrane weaker. Therefore, when a stale egg is opened, this membrane frequently ruptures, and when such an egg is dropped on a plate the contents of the yolk flow into and through the white. Such an egg is called a weak egg, although when it acquires an odor, the laity would refer to it as a strong egg. Fertile eggs almost invariably contain weak yolks. It has been found that these eggs appear before the candle to have whole yolks; but on breaking, the yolk mixes freely with the white. It is believed that such eggs are suitable for baking and cooking if their odor is normal and the white not green when the egg is broken. If, however, the seepage of the yolk is so advanced that it extends entirely through the white, the egg should be discarded. When viewed before the candle, a strictly fresh egg will be found to have the yolk located slightly above the meridian and symmetrical with the long axis of the egg. It is indistinct in outline and moves sluggishly as the egg is turned. As an egg ages, the yolk becomes more opaque and may settle against the lowest part of the shell, finally adhering. Such eggs are frequently harborers of bacteria, although the settling of the yolk is not in itself an indication of the fact that the egg contains bacteria; on the other hand, they are sufficiently suspicious not to be included in food products. Most eggs containing bacteria may be recognized by the odor."

"Weak eggs" and other eggs which give evidence of the presence of bacteria ought to be discarded. "Strong eggs" are often used in cooking, an imposition upon those who unwittingly eat them. An egg unfit to eat from the shell or poached, is unfit for any use as food. Eggs should always be regarded with suspicion and eaten only when known to be absolutely fresh.

# A Rat for Each of Us

How do you like to give up one-half of one per cent every day for the support and sustenance of a measly brown rat?

In substance this is exactly what you are doing, according to figures compiled by the United States Public Health Service, following a careful study in cities where the Service has made a survey.

There is one rat, at least, for every person in the United States. This estimate is considered conservative, but coincides with that for Great Britain and Ireland and also with authoritative figures for Denmark, France and Germany. The annual upkeep per rodent was computed by the same authorities at $1.80 in Great Britain, $1.20 in Denmark and $1.00 in France. The depredations in this country will very probably exceed the estimate for Great Britain. One-half a cent a day is considered conservative, but even on this computation it costs the United States $180,000,000 a year to support its rat population. (This does not nclude mice.)

It is because of this terrific economic loss and the additional fact that rats are a constant menace to the public health, that the Public Health Service has issued a warning to the country to take the necessary measures to destroy them. In a new bulletin, "The Rat," very convincing arguments are advanced as to why and how the rodent should be destroyed.

There are some very well authenticated instances which give a good insight into the cost of their upkeep. In a ship reaching an American port from Brazil with 40,000 bags of coffee, it was found that 30,000 bags had been so badly damaged as to require resacking. The cost of this in material and labor was $2,000 exclusive of the loss of coffee and the damage adjustment with the shippers. The number of rats on this ship was ascertained to be about 2,000.

On a certain Iowa farm rats in one winter destroyed 500 bushels of corn, or one-fourth of the summer's entire crop. Another farmer lost an entire summer's hatching of chickens and still another farmer in this section estimated his loss in grain and poultry due to rats as sufficient to pay his taxes for 3 years.

Many measures are suggested for destroying the rat, but the Public Health Service advocates one primarily as most effective. It is rat-proofing the buildings so that rats cannot get in to steal food, thereby starving them to death. Copies of the new Government bulletin can be obtained by writing to the U. S. Public Health Service, Washington, D. C.

# Outdoor Air vs. Influenza

The *British Medical Journal* urges "as the best means of combating the infection of influenza, the deep breathing of cool air brought about by exercise, and by sleeping in the open air—this last perhaps a counsel of perfection. The advice applies not only to influenza itself, but to the colds and catarrhs which, in the aggregate, are responsible for so much discomfort and loss of efficiency. A striking illustration has been related to us by Colonel C. T. C. de Crespigny, D. S. O., A. A. M. C.:

"During August, 1918, a transport left Australia bound for Great Britain. The 1,200 troops which she carried were accommodated in four troop decks of about equal capacity. Three decks were well ventilated with windsails, but the fourth deck was in this respect very unsatisfactory. Early in the voyage a form of infective pharyngitis and epidemic catarrh broke out among the troops. The incidence of the infection was ten times greater among the men occupying the badly ventilated decks than it was among the others. In all other respects the men were exposed to precisely similar conditions; they wore the same clothes, ate the same food, and all of them slept in hammocks slung very close together. Thus the experience has the value of a carefully planned experiment in showing the effect of freely moving air as a preventive of infections of this nature.

"Another striking instance, recorded by Colonel Adami, F. R. S., in the first volume of his book on the 'War Story of the Canadian Army Medical Corps,' was noted in the review published in the first number of this year. The winter of 1914-15 was very wet, and the troops under canvas on Salisbury Plain suffered extreme discomfort, but nevertheless continued in excellent health. When, after some six weeks, the discomfort of tent life and the increasing cold of winter induced the authorities to replace the tents by huts, influenza and throat troubles began to spread at once and rapidly, and, what was worse still, a series of cases of cerebro-spinal fever occurred."

# Brain and Brain Power

Is there any relation between the size of the brain and brain capacity?

This question has been much discussed, especially with reference to the relative intelligence of men and women. The average male brain is notably larger than that of the average woman, but that this fact does not necessarily imply greater intelligence in men is clearly evident from the fact that, when compared with the weight of the body the brain weight of women is larger than that of men; that is, for each pound of body weight a woman possesses more brain than a man. It is recorded also that one of the largest brains ever weighed belonged to an idiot, and the brain of an ignorant London bricklayer weighed as much as that of the learned Cuvier; while the brains of Shelley, Scott, Mozart, and Gambetta, all men of unusual intelligence, were among the smallest which have been measured.

# Department of Eugenics

Conducted by Reynold A. Spaeth, Ph. D.
Associate in Physiological Hygiene, School of Hygiene and Public Health,
Johns Hopkins University

# Children an International Asset

From time to time an attempt is made by various charitable organizations to draw the attenton of the public to the extensive malnutrition existing among American school children. How little people in general seem to appreciate the importance of children as an indispensable racial asset! It is only within the last thirty years that the rightness of taxing the unmarried and the childless as well as those with families for the upkeep of public education has been acknowledged. And yet, if the race is to progress, or even to maintain its present standards, not only your children and my children but *all* children must be taken care of, physically and mentally, to the limit of our powers. Where poverty is the reason for undernourishment, certain simple steps may be and have been undertaken to ameliorate conditions,—babies' milk stations, day-nurseries, free or cost-price school-lunches, etc. But where the underlying cause is ignorance and carelessness, other measures must be adopted.

In the city of Baltimore, Dr. McCollum, of the School of Public Health, is doing some very interesting work in the feeding of children selected from the public schools on the basis of underweight and underdevelopment. The publication of his results will, we hope, have a much-needed educational effect. The children who are the happy objects of Dr. McCollum's experiment were chosen irrespective of social strata. In many cases, families who are perfectly capable and willing to give their children proper food, through ignorance and lack of interest, permit them to start for school with the dangerous and ineffective solace of several cups of coffee and little or nothing more. Naturally children whose meals are planned—or fail to be planned—on such a scale, suffer just as much from malnutrition as those whose parents are economically unable to supply suitable and nourishing food.

If the children of America are in need of proper food—what of the children of Europe? In this country we at least possess food in abundance; with us it is a question largely of selection and distribution, combined with education in food values. But can we be so complacent as to think that by feeding and protecting from disease American children alone, we are really insuring progress in future generations? From the standpoint of eugenics, the idea is illogical and intolerable. The war has taught us nothing if not that our fortunes and those of our children are definitely influenced by the physical and social environment in which the peoples of other nations live. The hazards under which the younger generation throughout Europe, in friendly, enemy and neutral countries, are struggling to survive are appalling. Even in England, probably at present the most orderly and comfortable of European countries, a food shortage of essential fats and sugars exists second only to the temporary shortage under the U-boat campaign. The rations are two ounces of butter a week for those who can afford to buy it, and one-half pound of sugar at 22 cents a pound. Milk is 27 cents a quart and eggs 12 cents apiece. And these rations and prices are luxurious, ideal, from the standpoint of the starving masses on the Continent. There is a little comfort in the thought that relief agencies are at work trying to combat disease and starvation among the women and children. Real progress has been made in France and in other allied and neutral countries; three million undernourished children in various parts of Europe are now being cared for under the direction of Mr. Hoover, through the European Children's Fund. But the pitiful inadequacy of the aid extended to the needs of the people appears to be appreciated only by those who have come into actual contact with conditions in Central and Southeastern Europe. We can not refrain from adding that this lack of realization *must* be so, or there would not exist a market for silk stockings at $250.00 a pair. A beginning has at length been made in bringing relief to the starving children of the Central Empires,—the children of our erstwhile enemies. The Red Cross and the Society of Friends have for several months been attempting to help the German and Austrian children, but the overpowering need, lack of transportation facilities and of funds have made it impossible to accomplish very much. In France the Society of Friends has been unhampered; they have spent over two millions in reconstruction work and have sent 367 workers to that country. Twelve men and two women, the first party to be sent to Germany under the American Friends' Service Committee, sailed on December 11th. They will be reinforced by at least ten additional workers later on and it is hoped that a start in the distribution of food and supplies will begin not later than Christmas. The Committee already has $200,000 worth of food in Germany awaiting distribution, and now that official sanction to the undertaking has at last been granted, those who have heretofore withheld their assistance through timidity or on account of politics will probably give aid, so that the work may be extended on a more nearly adequate scale.

It is indeed high time that the necessarily hysterical partizanship induced by war should give way to a more generous view of humanity. The American people have always wished *not* to make war on women and children; and many of them thought, apparently, that war could actually be so carried on. We know now that that is impossible; that under war conditions children are the ones who suffer first, last and all the time. To those of us who have the good of the race at heart, who look forward to the development of a mentally and physically stronger and higher racial type, war may appear temporarily as a necessity; but when it comes to an end, our efforts must be concentrated on succoring the women and children who have suffered—whether they belong to us and our allies or to those nations with whom we were forced to fight. The reign of such conditions as exist at present in Germany, Poland and Austria is a menace to the race as a whole. Tuberculosis is rampant to an extent unimaginable in a country where poverty and lack of sanitation are the exception, not the rule. The Society of Friends reports that 85% of the children of Austria, Germany and Poland have rickets; in many cases the children's bones are so brittle from malnutrition that they break at the slightest fall. And the infant mortality is appallingly high—60% in Austria alone. In Vienna new-born babies die in the maternity hospitals from bronchial catarrh and inflammation of the lungs, on account of the low temperature of the rooms. The Vienna Children's Milk Relief in New York is trying to help with condensed milk, but it seems that only fresh milk, containing the essential vitamins, can now avert starvation among the children. The Burgomaster of Vienna writes the New York *Nation* an appeal to have some of the money for condensed milk diverted for use in paying the fares of children who might be sent to Switzerland to be boarded out and fed fresh food. Last summer the number of children starving in Vienna alone was estimated at 100,000. That present conditions are no better may be gathered best by quoting a portion of a letter from a Viennese, printed in a recent edition of the *Nation:* "Unless you visit a hospital where the poorest victims of society pass their last weeks, you get no idea of what the streets of Vienna are—a wandering hospital of an equalized type of sufferers: children looking old, women never more looking young, old people in whom you discover young men. Nature is dead for us—no shoes to go anywhere, no food found on the way; . . . There are some articles imported for the rich, but a paltry sausage is just as inaccessible to a small purse as a diamond necklace. Jewelers' and food producers' shops are all the same to me now—things that no longer exist for use. Never a grape, never an apple, no milk, no butter—an eternal sentence of bread and water (with the greater part of the bread bought by contraband and prices increasing). Will this last, or will it become still worse, is the only question? Of an improvement there is not the smallest indication."

We have the authoritative word of a Czecho-Slovak medical officer, a doctor who served on the Austrian, Italian and Russian fronts during seven years—ever since the first beginnings of the war occurred in the Balkans in 1912—that 60% of the returning Czechish troops were infected with venereal disease. The exact percentages for the German and Austrian troops have not yet been given out, but that they are correspondingly high is fairly certain. What this means for the present "rising" European generation it is not difficult to understand. With prolonged and continued starvation to break down resistance and with tuberculosis and venereal disease widespread and unchecked, the duty of all of us who have enough and to spare for ourselves and for our own children's needs, seems very plain. In the end—and the end is not far off—it will be our own children and the succeeding generations who will suffer the consequences, if we allow these conditions to continue. They are bound to spread; but it is not yet too late to combat them if the American people will cooperate wholeheartedly with the agencies that are struggling so valiantly in the field at present. But we must lay aside politics, trade jealousies and nationistic slogans long enough to look squarely at the universal truth—that children are the one and only international asset.

Mr. Hoover, in a letter to the Friends' Committee, strongly endorses the belated burying of the hatchet for the sake of immediate and adequate aid to the suffering women and children of the Central powers. His letter reads in part as follows:

"There can be no question as to the need of further expansion of the service that your society has been for some months carrying on in Germany. The vital statistics as to mortality and morbidity of German child life are sufficient evidence of this, aside from the personal knowledge I have as to the actual, nutritional situation among children.

"The food situation in all parts of Europe affects child life more than any other element in that community because the destruction of cattle and the shortage of cattle feed will continue the milk famine over this coming winter with great severity. Despite the suffering and losses imposed upon the American people through the old German government I do not believe for a moment that the real American would have any other wish than to see any possible service done in protection of childlife wherever it is in danger. We have never fought with women and children.

". . . In order that you may have definite support upon which you may rely, the European Children's Fund will undertake to furnish transportation, both railway and overseas, entirely free of charge to your society, for any supplies that you may wish to dispatch for child relief from the United States to any point in Germany, up to next July. . . . . . I believe there are many patriotic American citizens of German descent who will be willing and anxious to contribute to your society for this work. I strongly urge upon all such well-intentioned persons to support your society to the extent of their resources."

# Two Sides to the Population Problem

The famous falling birth-rate of France has become one of that country's most pressing problems of reconstruction. Echoes of the attempts in the French Chamber of Deputies to remedy the situation find significant expression from time to time in the American press. A typical editorial on the subject is quoted below from the *New York Times* of Nov. 29, 1919. As usual, the editor skirts cautiously the supposedly dangerous subject of birth control, shows an evident ignorance of the possibilities of maternity pensions, and pins his faith to a rather pathetic belief in women's ingrained conviction of the duty of childbearing. We quote the editorial because it states very well the economic and social facts back to the decline in the birth-rate of the middle and especially the professional classes, but largely because it is so typical of the way in which our more conservative leaders of public opinion slip into new slogans rather than face the logical sequences to the facts they know so well. In this case the new slogan is

## "Birth Release"

"Professor Pinard, who announces a campaign in the Chamber of Deputies in behalf of larger French families, may be 'an authority on maternity,' but he will scarcely pass as an expert in feminine psychology. He says that the woman who considers maternity a duty is 'unfortunately the exception.' It is true that among the many women nowadays who do not have children there are some who say that they do not consider it a duty. But a woman's age is not the only subject upon which her depositions are unreliable. The duty of childbearing is as deeply ingrained in her nature as the duty of amounting to something is ingrained in a man's. Both are primordial instincts. If they are denied, the unfortunate subject surrounds the fact with a mesh of mental shifts and evasions, the chief aim of which is to deceive himself. But the workings of an emotional complex are the last thing that should mislead any real authority on women.

"In France, as elsewhere, the decrease in the birth-rate is a direct result of the so-called industrial revolution. When productive industry centered in the household, a wife could pay her way in spinning and weaving, baking and brewing, and still bear numerous children. The children themselves did chores and so made their keep. Maternity was as normal and natural economically as it was emotionally; and it had been so from long before the dawn of history. The factory system took industry out of the household; and with it went other maternal duties, such as teaching and skilled nursing, which are now a severe tax upon the family purse. In the old and literal sense of the word, a wife is no longer a helpmeet. She doubles the strain on her husband's earning power, and if she has three or four children, she trebles it. Childless women who understand these things say nothing. Those who do not understand them, or much of anything else, mask their chagrin under a pretense of advance opinion.

"Professor Pinard recognizes that there is an economic element in the situation; but the shortcoming of his realization is indicated by the fact that he hopes to find a remedy in the law. 'The State has a duty to aid' parents to bring up their children. It may have, but the problem of doing so efficiently is one of the utmost complexity and difficulty. To people living on the margin of existence a maternity benefit may be made effectual, though it has not yet succeeded very well in actual practice. But even such a sum as would be a godsend on the margin of existence would be a bagatelle to people in the middle station of life. It is among the moderately well-to-do that the decline of births is most conspicuous and the loss to society most irremediable. People on the verge of destitution still multiply with the age-old fecundity, but those whose abilities and energies have raised them into the spheres of education and enlightened living find that, without efforts and self-sacrifices little short of heroic, they cannot give the world its much-needed increase of their kind.

"The true problem of population is thus not birth control but birth release, and a selective birth release. Before the war it had already begun to take this form. Since the armistice the situation has been vastly aggravated by the advanced cost of living and the injustice with which it has fallen upon the salaried brain worker."

Let us confine ourselves temporarily to the American problem of population. We believe that it involves both the discouragement of the breeding of social dependents and the encouragement of the socially independent. The problem thus has both its negative and its positive aspects. Birth control is an important but by no means the only negative aspect. Similarily, a selective birth release is probably the most important complex and difficult positive aspect. Intelligent discussion of the problem must not limit itself to either positive or negative phase. The "true problem" is therefore considerably more than either birth control or birth release.

The chief aim of race betterment is to increase the proportion of the social group "whose abilities and energies have raised them into the sphere of education and enlightened living." This proportional increase can be favored in at least the following ways:

1. By legislation demanding the sterilization of degenerates and criminals. This represents an extreme negative eugenic measure, and such laws are now on the statute books of nine or more States. The purpose of sterilization laws has unfortunately not been sufficiently brought to the attention of the public. Such laws are consequently not nearly so effectual as they might be.

2. By disseminating information regarding the control of conception among women who are still living on the margin of existence. The combination of unreasonably large families and unfortunately small incomes places an intolerable burden upon an enormous number of American women. By regulating the number of children—which is the recognized practice among the educated and enlightened—such families not only raise their standard of living but increase the chance for social independence for the second generation. The vigorous opposition that has been encountered in attempting to give to the poor what the more "enlightened" can purchase, viz., birth control information, is probably due, in part, to the association of birth control with criminal abortion. Opposition has also come from the worshippers at the shrine of the great god "Numbers." If our population continues to decrease at its present rate, say these idolaters, we shall have zero children in 1973! Militarism and a

distorted sense of values will account for much of this hysterical reference to statistics. Although we are assured that we are about to enter upon an era of world peace, the campaign in the Chamber of Deputies in behalf of larger French families, not to mention the campaign in the United States for universal military service and a tremendously increased Navy, has its ominous aspects. For the road to race betterment can never be open so long as Mars sits in the toll house, demanding the blood of our selected best.

# Futility of "Special Classes"

Eugenists have frequently gone on record as being opposed to the special classes for backward children that are so highly prized by well-meaning humanitarians in school work. Those of us who are interested primarily in discouraging the further dissemination of defective germplasm feel that a much more intelligent and effective method of dealing with the problem presented by the backward children in our schools is possible. There are doubtless many backward children who are in no sense "defectives." They may be mentally a bit slow, undernourished, improperly cared for at home, etc. But the greater proportion of backward children, we believe, is made up of those who should under no circumstance be placed under the same regime with children of normal hereditary constitution, allowed to take up the major part of the teacher's energy in an unending struggle to fit them in where they cannot go, and then turned loose upon the community. An investigation made by the school department of Detroit of the records of 100 pupils from the "special classes" who had left school at the age of 16 bears out this point of view. Of the 100 cases investigated, 61 were boys and 39 girls; none had been out of school more than five years. The following tables summarize their status at the time the records were made:

| | Girls | Boys |
|---|---|---|
| Number of children born | 3 | 0 |
| Married | 5 | 0 |
| Sexually immoral | 14 | 0 |
| Working | 16 | 39 |
| Cared for at home | 15 | 11 |
| In institutions | 1 | 5 |
| Have been arrested | 4 | 13 |
| Dead | 1 | 2 |
| No information | 6 | 4 |

**Number of Jobs**

| | | |
|---|---|---|
| None | 11 | 12 |
| One | 9 | 11 |
| Two or three | 2 | 9 |
| Three or more | 5 | 23 |

Of the three children recorded, two are illigitimate, born of known feeble-minded mothers.

# Polydactylous Families

Bonnevie has found in a certain district in Norway a number of families with a supernumerary little finger, perfect or rudimentary, on the right hand and sometimes on both hands. Four or five generations of the different families are known to present these finger anomalies more or less frequently. Intermarriage between the different families shows that all of them trace back to one common ancestor, about 1660, who presented the finger anomaly in a pronounced form. Forty of his descendants in the six different families are known to have been polydactylous, and not all the members of the families were examined.

# Department of Physical Education

**Conducted by C. WARD CRAMPTON, M. D.**

Director of the Department of Physical Education, New York City Public Schools, and
Dean of the Normal School of Physical Education, Battle Creek, Mich.

# Physiological Aspects of Walking

(*Continued from January* Good Health)

Walking is a "simple" exercise because it has been done by countless generations. The nervous system from the spinal cord through the cerebrum becomes quickly habituated to its performance; and as we learn to walk, it gradually becomes automatic and relieved from conscious control. It is, therefore, an exercise which is simple and easy to perform, and relieves the mind completely from the attention strain which is associated with more complex exercises, as for instance, fencing. This simplicity permits the mind to be completely at rest while the exercise is being taken, which is an exceedingly important consideration.

It is a "general" exercise, engaging practically every muscle in the body. Less than ten percent of the muscles (and these are small ones) are not actively engaged. The muscles of the lower leg work the hardest, and next in order are the great muscles of the thighs. The muscles of the abdomen and back are engaged in holding the trunk erect. The shoulder and arm muscles are in a quiet state of rhythmic contraction. All of these muscles, fully forty-five percent of the whole body weight, contract and relax, one after the other, in proper alternation and orderly sequence, again and again, as invariably and as correctly as the movements of a highly complicated piece of modern machinery. To one who has uncovered the human musculature by dissection and has handled each individual muscle, observing their form and structure, the marvel of their synchronized movement is beyond expression. There are no machines ever conceived by the mind of men half so complicated or one-tenth as efficient. Such are the wonders of coördination.

Walking is a "physiological" exercise. Relieving all attention strain and using large masses of muscle, it produces a great amount of body activity. Metabolism is placed on a higher level. With nearly half of the body weight busily engaged in oxidizing carbohyrates, there must be a tremendous increase in the activity of the rest of the body to supply food and air. The blood is robbed of its foodstuffs and oxygen. The circulation is speeded and amplified to bring supplies to the muscles. The liver is called upon for its glycogen. The lungs are requisitioned for air and the intestinal tract receives warning that more supplies are needed. The kidneys are reflushed. The ductless glands and all of the rest of the body share in a general vivification. All this is comprised in the term "increased metabolism," which means that the body factory is at work, with no hands idle, no Bolshevism and no pathogenic strikes, but rather quiet, normal activity, the evidence and earnest of health.

Walking is an adaptable exercise. It can be quiet and mild, actually decreasing the rapidity of the heart and only slightly influencing the circulation; but by easy gradations, it can become one of the most vigorous of exercises. This makes it especially valuable to the physician, who can prescribe walking, secure in his control of the dosage.

These are the more general physiological aspects of walking—from the standpoint of the physiologist and the physician one of the most interesting and valuable of exercises.

## Psychological Values

Walking is easily the first of exercises in its interest to the psychologist for the mind never completes a thought without a physical correlative. There is always a muscular action sought for to complete the mental picture. and either to express it in some meaningful manner or to discharge the excess potential. Witness the business man at his desk pulling his mustache, the worried woman wringing her hands, the orator before his audience by gesture completing the picture drawn by his words. The physical expression of ideas has become an art. We often call it dancing, one of the most beautiful of arts because it is so human, so complete, and so full of spiritual satisfaction.

To the man whose mind is straining to set facts up in a row and make them drill in orderly array toward one supreme purpose, the pacing up and down the study floor is a blessing. It gives physical foundation to constructive thought. It is a balance wheel, absorbing energy and carrying it over to the next moment's need, a safety valve which saves the machinery from the destruction of great pressure.

A man's mind may labor until exhausted, but yet be incapable of resting. Such a mind has been overworked on its higher levels, while its lower departments have been idle. There can be no relief of the upper cerebral centers unless and until the mind activity which caused the over-illumination of the upper areas is turned into the lower. Walking provides just this outlet. Walking makes just sufficient demand upon the central nervous system to bring its activity down to the normal. The rhythmic throb of the heel upon the pavement, the soothing alternating of contraction and relaxation brings peace, calm and orderly regulation of thought, of mind and soul. Difficult problems lose their hard angles and shape themselves into a semblance of order. Troubles, ill-defined and harrassing, take form, and can be fought down and conquered. Nagging worries, are essentially an ever-recurring cycle of painful sequence, where one unhappiness leads to another, and that to a third and that again around to the first,—a circle which mental feet seem to tread, bleeding and torn, unable to escape from the savage round, compelled to traverse it and at each tour to make the pathway deeper. This vicious circle, although it is found to be the basis of many neurasthenias, and is the characteristic of many real mental disorders, occurs in almost every one's life. To escape from it, one must escape from the surroundings which suggest it and seek others, and walking gives the central nervous system something else to work upon, something sedative, relaxing and stimulating, Walking is indeed the best cure for worry.

Aristotle, the philosopher, walked as he taught. In founding the School of Peripatetic Philosophers, he gave to the race a landmark of the value of walking as the foundation upon which superb structures of high thought might be built. Since the Greeks sent their boys to school with slaves whom they called *pedagogues,* the word has come to mean teachers rather than slaves, possibly because the boys learned more while walking to school with the slaves than they did at either home or school.

Walking involves a cessation of sitting

The cave and out of doors

still, and getting out into the open. Modern man lives in a cave which he has constructed for himself. As in the olden times when men lived in real caves, they possess safety and shelter, but too long living in caves dwarfs mind, body and soul. Modern civilization threatens to make its men, in their pursuit of riches, like the gnomes who dug the Rhine gold and guarded it. The race must come to the mouth of its cave, view the fair prospect and GET OUT OF DOORS.

Get out into the open—the home of man—where you belong, among your real friends!

The trees have grown up with man. The grass has always been his carpet; the shrubs and bushes his little brothers and sisters.

Man belongs out of doors. His hands and feet, his heart and brain, have been made what they are by touching, seeing, feeling, moving, sensing and hearing out-of-door things.

His eyes are shaded for outdoor lights, and his best decorations of his little cave merely mimic Nature's artistry. Every fibre, every cell, every molecule, every atom, is at home out-of-doors.

The long vistas and far-stretching fields, the road winding over the plain and dipping hazily into the mysteries beyond the horizon; the tremendous skies roofing the world, where man dwindles into his proper attitude of awe-struck adoration; the language of running brooks, the majesty of an old stone bridge; the transmutation of heaven's brilliance into the corrugated sparkles of the wind-kissed lake's surface, the whispering of the wavelets on a pebbly shore; the deep soft blanket of the snow with its revelation of small animal life upon its surface, the ice upon the trees, the play of the chick-a-dee; the springtime freshets happily promising flowers, the buds and blossoms themselves—all these are the rich reward of the man who walks!

## Walkers

The Chinese are a very old and a very wise people. They have folk ways which are very different from ours, because they know more about life and they take longer to know it. Western civilized peoples are surfeited with the luxuries of civilized ease. After twenty generations or so more of progress, we shall come around in our cycle to many of the points of view of the "Middle Kingdom." One of their points of view is that the further you go, the higher you get, the more human you become. They have a quaint way of calling a babe in arms the "Son of the Great Emperor." When he becomes a happy, irresponsible little run-about, he is the "Son of a Mandarin;" but when he is grown up enough to be able to carry a message and can do a grown-up task with certainty and dispatch, he becomes the "Son of a Common Man." Growing up and becoming great makes one more common.

The true cosmopolite is most human. He is great enough to be common. Below is a photograph of a "Son of a Common Man," a servant of the public good, clad in light, rough walking costume, with canteen and slim walking stick, taken in a garden in far-off Palestine,—college president, poet, educator of ten million children, editor and publicist, one of the apostles of America's service to mankind, United States Commissioner to Palestine, one of America's enthusiastic walkers, John Huston Finley, the "Son of a Common Man."

"The Son of a Common Man"

# In Praise of Walking

JOHN H. FINLEY, LL. D.

*From the Youths' Companion.*

Wheels, it is true, have brought great power, help and comfort to man, but they have exacted much of him in return. They have diminished his litheness of body, his self-dependence, his love of the earth.

Two ancient myths aptly illustrate what wheels are doing or preventing, the fable of Antaeus, who could wrestle successfully with every stranger who came to Libya, because, whenever he touched the earth in his wrestling, his strength was renewed and the fable of Ixion, who was punished by being tied to a wheel which never ceased to revolve. Wheels, although they carry men where they may touch the earth, keep them from touching the earth as often as they should, and from renewing their strength as did the ancient wrestler. Wheels have millions of Ixions tied to them: many of the poor by their poverty; many of the rich by the fashions they make; many neither rich nor poor, by convention, custom or indolence.

The tyrannies of wheels are not the less to be resisted because their blessings are not to be estimated. One way of resistance is walking. It is of the uses, satisfactions and delights of walking that I am to speak a few words out of my experience.

A country boy, especially a boy of the prairies, thirty years ago was obliged by his occupations to walk; for this I am now grateful. Although I never carried a pedometer in the furrows of a harvest-field, I have no doubt that in the long summer days I often walked between dawn and dark as far as from Marathon to Athens—and sometimes there were bumblebees and "blue racers" and the like to encourage a Marathon pace.

But such vocational walking is largely past. A few weeks ago, while crossing Indiana, I saw a young farmer cultivating corn; he was riding on a comfortable seat, with a canopy over his head, and he had probably plowed the same field in a like comfortable posture. Sitting, he certainly planted it; sitting, he doubtless sowed the small grain in the neighboring field; and sitting, he doubtless will reap it. Millet would have to search long on those wide-horizoned prairies now for a "Sower;" and Gray would find no "weary plowman" plodding his homeward way in the twilight.

And the neighborly journeys, the walking to church—in the times when the horses were given rest—are now also like journeys on an escalator. I can still recall with what pure delight I walked across the fields to see a neighbor plowboy after the day's work was over, or to read Livy with the minister a mile away. Now the farmer's son rides in a top buggy or an automobile, or takes a trolley-car to a town miles distant—and Titus Livius is no more. I do not regret these new comforts and advantages in themselves, but they show that urban tyrannies have reached even to the villages and fields.

There is one day, conspicuous in my memory, the like of which seldom comes even to the country boys in these days of wheels. After plowing corn throughout the morning, I walked eight miles under a blistering sun, took an examination in solid geometry, and walked the eight miles back again. If you have read Browning's "Saul," as I had not in those days, you will know what the homeward journey was like. Can you imagine David, after that night of wrestling with the bad spirit of Saul, having his vision in a trolley-car, or even in a chariot? The touch of earth seems essential; it puts one into relationship with the lasting things, whereas wheels disturb that relationship, at any rate till they become glorified.

It is figurative language, of course, to speak of God's "walking" with man. But I do not know where to find a better expression for the companionship which one enjoys when walking alone on the earth. I should not speak of this if I thought it was an experience for the patriarchs alone or for the few. A man does not know one of the greatest satisfactions of life if he has not had such walks.

# Weston

Edward Payson Weston was sickly as a child. He took to walking. When he was twenty-two years old he walked from Boston to Washington to attend the ceremony of Lincoln's inauguration, 453 miles in 208 hours. Later Weston took many long walks,—Portland to Chicago, New York to San Francisco and his last when he was seventy-one years old, from Los Angeles to New York City.

The following is quoted from "Walking," published by the American Sports Publishing Company, New York City:

"Walking is the one perfect exercise. It is perfect because it is natural. The Almighty gave us all the tools we need to preserve our health without going to gymnasiums.

"I wish I could impress upon everybody that there is no exercise more dignified or less expensive or more conducive to health than walking. Man—or woman—is not the poor weak mortal one finds generally represented. Both men and women can accomplish feats requiring great strength and endurance, and yet do no violence to their physical constitutions.

"We are wonderfully made. Weakness was never one of the original components of our bodily organization. It is a foreign agent introduced and made respectable by that kind of culture which represents indolence.

"In a normal state man is not physically weak. He breathes the pure air of heaven. He drinks the water that bubbles like silver from the mountain spring. He uses his feet to convey him from place to place. He feeds on the same air and the same sunshine that give vitality and strength to the tree of the mountain forest and, like the tree, he grows in vigor and physical beauty.

"Now, if civilization dethrones strength, throttles health and introduces the foreign element of weakness into the system, it must be looked upon in the light of an evil. Civilization at once becomes, instead of a blessing, an opponent of the plain laws of Nature.

"In building the mental man we must not destroy the physical; and yet that is just what our boasted civilization is doing for us. It rears the infant in a hothouse, makes a lazy lounger out of the youth, encourages indolence, which is the mother of vice, stifles the growth of physical power and sets up shadows instead of men, that it may the more easily knock them down into the grave.

"The true mission of civilization is to refine the crudities of normal man, not to destroy the God-appointed agencies of health and strength. Health and bliss are intimately associated. One depends for life upon the other. And health is dependent upon exercise.

"People ought to get out on the road. Keep your legs and feet spry and limber. Pump your flattened chests with God's free air. Redden your blood, start it coursing through your veins. Purify your sluggish skin with honest sweat. Throw away your cigarettes and smash your cocktail glasses. Leave subways and the 'L,' trolley cars and autos to rheumatic old women and babes in arms — walk, walk, walk! Don't be afraid of the rain. It has its part to fill just as the sunshine has. It is a blessing if you take it right.

"Outdoors is our home; indoors an unavoidable evil which we must escape whenever we may. Stop thinking about yourselves—and walk!

"How many people know that 90 per cent of the business and professional men of the United States suffer from some functional trouble—heart, lungs, kidney, liver, stomach? And it's only because they won't take the proper exercise. Every day in the big cities we read notices of severe illnesses of lawyers, brokers, professional men, clergymen, bankers, merchants and others of their kind who have been forced to drop, either for a period or permanently, because of the continual strain of business. They have not had the saving antidote of physical training.

"Ask a physician downtown here in New York to point them out to you—the scores of men on the streets and in the office buildings with sallow cheeks and drawn faces, staring eyes and shuffling steps, almost on the verge of collapse. Oh, if they would only walk—walk till they were tired out, bodily and mentally! Then they would have a chance."

# On Walking

JAMES FREDERICK ROGERS, M. D.

*From St. Nicholas, September, 1915*

There have been some famous pedestrians, the emphasis on the word famous. Charles Dickens was a great walker. "12, 15, even 20 miles a day were none too much for Dickens; swinging his blackthorn stick, his lithe figure sprang forward over the ground, and it took a practiced pair of legs to keep alongside of his voice." He once did "a special feat of turning out of bed at 2 o'clock in the morning, after a hard day, pedestrian and otherwise, and walking 30 miles into the country for breakfast." It will be noted that Boz used all three of the helps to pedestrianism—a cane, canine, and human company.

Sir Walter Scott walked twenty or thirty miles without fatigue, notwithstanding his limp. Browning, when past seventy, could take long walks without fatigue, and Wordsworth, at threescore, did twenty miles a day. De Quincey considered fourteen miles a day necessary to his health; and Lamb, notwithstanding his "almost immaterial legs" could walk during all the day. Brahms was a tireless pedestrian and Beethoven always took his daily walk, or "run," of five or more miles, in all manner of weather, while Turner traveled twenty miles a day, sketching as he walked. Herbert Spencer, at thirteen, in a fit of homesickness walked forty-eight miles one day and forty-seven the next, but was probably injured in so doing. Tolstoy, at fifty-eight, walked one hundred and thirty-eight miles in three days.

Great men are usually of powerful physique, and many of us would suffer if we emulated their walking habits, but they have not all been so vigorous. Immanuel Kant walked for at least an hour a day;

but doubtless Bacon or Locke, Chopin, or Weber, Spinoza or Calvin, who were none of them in good health, would have found a walk of a mile or two quite sufficient, or even too much.

Walking in the city has its advocates, as has the country stroll. There may be more in the metropolitan thoroughfare to abstract the companionless pedestrian; but it depends on the city and the thoroughfare, as well as on the pedestrian. Companionship of dog or man is more fully enjoyed in wandering over fields or following country roads. The unyielding hardness of the city pavement (relieved to some extent by the intervention of rubber heels) is disastrous to the arch of the foot, while the kindly give of the soil invites the rural rambler.

For walking one must be properly shod. The high heel and peg-shaped heel and the narrow toe help to draw the sand of self-consciousness into the machinery that otherwise enjoys its own exhibition of power and endurance. For pedestrianism we need plenty of spring, and all the base of support possible. The exercise of walking, if the foot coverings allow, preserves and strengthens the foot.

There are good walkers and poor walkers,—walkers that walk with ease and walkers that labor along. We are not all built alike, and could not all walk alike if we tried. For purposes of exercise, it does not matter greatly how we walk, so that we stand fairly erect and do not jar the body too much by keeping the knees too straight and planting the heel too firmly. Walking is a continuous falling forward, a simultaneous moving forward of the underpinning to prevent the fall. We can assist the falling by tipping the whole body forward without stooping the head and shoulders, and we can prevent the fall without jarring the body unnecessarily. It is of chief moment that we walk, and that in walking, the mind finds absorbing adventures of its own, so that it keeps the body joyful and not depressing company.

# Tewkesbury Road

*(The Story of a Roundhouse, 1913)*

It is good to be out on a road, going one knows not where,
Going through meadow and village, one knows not whither nor why;
Through the gray light drift of the dust, in the keen cool rush of the air,
Under the flying white clouds, and the broad blue lift of the sky.

And to halt at the chattering brook, in the tall green fern at the brink
Where the harebell grows, and the gorse, and the foxgloves purple and white;
Where the shy-eyed delicate deer troop down to the brook to drink
When the stars are mellow and large at the coming on of the night.

O, to feel the beat of the rain, and the homely smell of the earth,
Is a tune for the blood to jig to, a joy past power of words;
And the blessed green comely meadows are all a-ripple with mirth
At the noise of the lambs at play and the dear wild cry of the birds.

—*John Masefield.*

# Home Economics

Conducted by LENNA FRANCES COOPER, B. S.

Dean, School of Home Economics, Battle Creek Sanitarium

# Our Daily Bread

CORINNE KING

If we wish to take in a literal way the prayer which has served all Christian peoples down through the centuries, we could find much food for thought in the clause, "Give us this day our daily bread." Scientific research has taught us that many of the customs handed down to us from past generations have not just happened, but have been instituted in order to supply our physiologic needs.

But while recognizing this fact, we must also realize that through the progress of civilization we have often strayed from "the straight and narrow path" and lost sight of our original text. In other words, we now interpret "our daily bread" as meaning the creamy white loaf which is the pride of a good cook, instead of making it comprise all our cereal foods used in the many different palatable ways which are possible in their preparation. Nature has provided us with any number of cereals, but comparatively few varieties are commonly used either in this country or others.

Though not an entire food, they form a very important part of our dietary. They are all rich in starch and so give us a valuable source of energy and heat-producing material at very little cost in comparison with other more expensive foods which give the same fuel yield. Compared with other cereals wheat is rich in protein, though some varieties of wheat contain more protein than others. On the other hand, rice has very little protein, and so we see the advantage of using all of the cereals one way or another. An added advantage in using other cereals besides wheat for bread is that the whole grain is used, and so we get the food as Nature prepared it for us, including the vastly important mineral matter and vitamins and the bulk which we need to avoid and overcome constipation; whereas the modern method of milling wheat deprives us of everything but the starch.

It is a common but mistaken idea that corn and oats are heating foods and should therefore be excluded from the summer dietary. It is true that corn and oats have a higher percentage of fat than the other cereals, but on the other hand it is small compared with the amount supplied the body from other foods which we eat the year round; and the well-balanced ration will have in it three-tenths fat, regardless of the season of the year. The tendency to increase our fat content in the winter is a mistake, for the average person is living in summer temperature even in the winter time in this day of modern heating systems.

As wheat is the grain most universally used, it should have more thought and attention given its use in the dietary than it usually receives. The whole wheat (not the whole wheat flour which we ordinarily get in the market but the entire grain ground) should be used both in bread-making and as a porridge. If it is not possible to obtain such a product otherwise, it may be ground in the home in a small mill made for the purpose or even in an ordinary coffee mill. The use of this whole wheat in the place of the white flour to which we are accustomed cannot be over-emphasized. It is especially important in the feeding of children; for it gives them the proper amount of bulk and also the mineral matter and vitamins which they must have to make a proper growth.

However, if we are going to make white bread, we should learn to make it as good as possible. A loaf of bread should be light in weight according to its size, should be symmetrical in form, and have an unbroken, golden brown crust, which should be smooth and with somewhat of a luster. Both the crust and the crumb of the loaf should be elastic, so that when pressed out of shape it will regain its form when the pressure is removed. The crumb should be creamy white and the whole loaf should be porous, with the holes uniform in size,

In order to obtain this perfect loaf one must know what kinds of materials will best produce it and in what manner they must be manipulated; also the care of the bread after it is removed from the oven. Many pages might be written on these points, but a brief consideration will be somewhat of a guide to the bread-maker.

The necessary materials for bread-making are flour, water, yeast and salt. Milk, fat and sugar may be added, but they are not essential to the production of a good loaf of bread. So the first essential is a good bread flour, and in order that flour may make good bread it must have a large percentage of protein, which in wheat is in the form of gluten. Some varieties of wheat have more gluten than others. Spring wheat is better for bread flour than winter wheat, because it contains a larger percentage of gluten. However, a hard winter wheat is sometimes used for bread-making. The gluten is the material which makes it possible for the wheat dough to become light or to be a mass of thin-walled bubbles.

Good white flour should be creamy white in color, and should be fine, though when rubbed between the fingers it should have a granular texture and fall easily apart when pressed in the hand. Flour should always be kept in a cool dry place and well covered, so that dust and dirt will not be accessible to it; and since it absorbs odors very readily, should not be kept with other supplies which have strong odors.

The water used in bread-making should be just as clean and pure as that used for drinking purposes, and if milk is used, either whole milk or skim milk, it should be scalded. If the long overnight process is used, it is better not to use milk, as it is liable to sour.

Compressed yeast, dry yeast or liquid yeast may be used. Under proper conditions of heat and moisture, the tiny yeast plants grow and expand, but like all living things they may be killed by too much heat or their growth suppressed by exposure to cold; so it is very important that the bread, from the beginning of the process to the time it is taken out of the oven, be kept at just the proper temperature. During the raising process the correct temperature is from 75 to 80 degrees Fahrenheit, and if the overnight process is used, even a lower temperature, about 65 degrees, is best. The correct temperature may be maintained by surrounding the pan with hot water, or by placing it in a cabinet for bread-making or in a fireless cooker.

When the bread goes into the oven, the heat should be so regulated that a piece of paper placed in the oven will reach a golden brown in about five minutes. If the oven is supplied with a thermometer, the temperatures should be from 400 to 425 degrees to begin with, and then gradually lowered to about 380 degrees.

Any kind of fat that is ordinarily used for cooking may be used for bread-making, but it must be sweet and in good condition.

The utensils used should be very clean, so that as few bacteria as possible will get into the bread, for the same conditions which provide for the growth of yeast also allow other bacteria to grow. If several loaves of bread are being made, a bread mixer is very convenient and lessens the labor. The pans should all be of the same size and the same material, to insure uniform baking of the loaves, and of course seamless pans are the most sanitary. For loaves made from one cup of liquid a pan holding one and one-half quarts is suitable.

## Wheat Bread

### Short or Straight Dough Process

ONE LOAF

1 cup lukewarm milk, water or a mixture of the two
½ cake compressed yeast
1 tsp. salt
1 tbsp. fat (if used)
1 tbsp. sugar
3 cups sifted flour

Boil the water or scald the milk. Put the sugar and salt and fat (if used) into a mixing bowl. Pour the hot liquid over it and allow it to become lukewarm. Mix the yeast with a little of the lukewarm liquid and add it to the rest of the liquid. If convenient, this may be set aside in a warm place, not over 86 degrees F., for one hour, to lighten; or if more convenient, add the flour at once, putting in a little at a time and kneading until the dough is of such consistency that it sticks neither to the bowl nor to the hands. This requires about ten minutes. Cover, and allow to rise 1¾ hours at a temperature of 86 degrees. Cut down the dough from the sides of the bowl, knead a little, and set aside again to rise for one hour. With a good bread flour the dough should treble its bulk in each rising. Divide into equal portions, mold and place in pans of standard size. Allow to rise until a light touch will make a slight dent. Bake fifty minutes.

### Short Sponge Method

All the ingredients are the same as for the short or straight dough process, but only half the flour is added at first. When this mixture, which is called a sponge, is so light that it will fall at the lightest touch, it is ready for the addition of the rest of the flour.

### Overnight Sponge Method

Use the same proportions as for the short process, except in the case of the yeast, which should be ⅛ cake of compressed yeast for each loaf. Use water rather than milk. In the evening mix the yeast with the water, salt and half of the flour and beat thoroughly. Cover and place at a temperature of from 65 to 76 degrees F. or that of an ordinary room. In the morning add the sugar and the rest of the flour and proceed as in the case of the short process.

### Overnight Straight Dough Method

Use the same ingredients as for the overnight sponge method, but put in all the ingredients at night.

### Home Ground Wheat Bread

1¼ cups water or skim milk
1¼ teaspoon salt
1 tablespoon sugar
3 cups home ground wheat flour
½ cake dry yeast or 1 gill liquid yeast

Set a sponge at night, using half the flour. In the morning add the rest of the flour, beat well, put into a greased pan, allow to rise until it doubles its bulk and bake.

It must be remembered that in making bread the best results are obtained only by thoroughly working the gluten, and so when the flour is added to the liquid, it should be done gradually and well beaten. When the dough becomes too stiff for beating, it should be kneaded, in order to distribute the ingredients evenly and work the gluten. The time to stop adding flour is when the dough can be kneaded without sticking to the board or the hands when unfloured. Some flours will take up more moisture than others, so that a definite amount of flour cannot be given for any recipe, but in general, one cup of liquid will require 3 cups or ¾ of a pound of flour.

And, in general, the dough made from a hard wheat flour should amount to three pints for one loaf when it is ready to be made into loaves. This can be ascertained by the following methods:

If one loaf of bread is to be made, before mixing it, pour three pints of liquid into the mixing bowl and mark the point to which the water comes. This will indicate the height to which the dough should rise.

A small glass may also be used as an indicator. Before the dough is set to rise, take off a small piece and place it in the tumbler. Mark the height to which the dough will expand when it has trebled its size, and set it to rise along with the large loaf.

In baking the bread the loaves should be so placed in the oven that a circulation of air is provided around all the loaves. The bread should begin to brown in fifteen minutes, and loaves made from one cup of liquid should be done in fifty minutes. When the bread is removed from the oven, the loaves should be placed on a rack, where the loaves should not touch one another. If a clean place can be had, where the dust and dirt will not come in contact with the bread, it is better not to cover it, as this treatment insures a better flavor to the bread.

# Prepare Girls for Homemakers

EDNA NEIGHBORS

According to the census of 1910, there are in the United States more than forty million girls and women. Of these, about eighty per cent will marry and homemaking will become their chief occupation. The large majority of these girls and women are responsible in one way or another for some part in the home activities, either as managers and workers in their own homes or in the homes of others. Of the vast number who do eventually enter upon the wonderful business of homemaking, how many there are who will give practically no thought or preparation toward this greatest of all occupations. Perhaps the common adage, "Ignorance is bliss," is very applicable to this situation. Many girls might shrink from assuming the duties of an efficient housewife if they realized the varied duties devolving thereupon.

To many of us the term "homemaker" is synonomous to "keeper" of a house. Any similar interpretation is very indefinite and limited. Homemaking is a composite of many and different occupations requiring various forms of related knowledge. Under ordinary circumstances the efficient homemaker must be reasonably skilled in several occupations. The successful homemaker must be a skilled worker in general housekeeping, in the preparation and serving of food, the care and rearing of children, the care of the health of the family, the care and the repair of the clothing of the family, and the promoter of the public good of the community. As a joint manager, the homemaker is largely responsible for the character and standard of the home, and of the product of the home—the child. She is usually the business manager of the home—the agent through whom the disbursement of a large percentage of the family funds is made. She plans her own work, that of the members of her family, and the work of the employees if she has them. She is the educational director, the health and welfare manager, and the social head of the family.

It is the duty of every parent to give his daughter every opportunity to fit her for this great work.

Is it fair to the daughter of the wealthier parent that no expense is spared in an education which prepares her for various vocations but not the one she will naturally follow? From the time she is a wee kindergartener, with the most high-priced teachers obtainable, to the day she is "finished" from the most exclusive schools, thousands of dollars have been expended without giving her the training the average high school girl receives in home economics. Music, art, literature, the sciences, polishing in social graces—all have their place in a well-ordered course of study; but should those subjects be accorded the first place, and equally as useful if not more useful subjects allowed the fragments of time? The little knowledge women and girls belonging to the more influential class, have of dietetics and the care of the sick is appalling. They often know nothing of the relative values of different foods. The situation is most lamentable because they are leaders, the force usually back of any movement for the improvement of conditions among the poor. There may be no necessity for any work on their part; but should they not be able to judge whether their plans are efficiently executed, whether those being taught are being taught things worth while? The same is true of the home. As manager of a home, only responsibility in its last analysis may devolve upon them. The help problem in the home, though, is fast becoming a most serious one, it being often impossible to secure skilled help. As a result of this condition, it becomes the more evident that courses in homemaking should be demanded of all schools, whether private or public.

Since homemaking is a subject of such great importance in the life of all girls, and since it fills an important place in democratic education, should not all parents see to it that their daughters receive the training offered in this department of our schools? Should there be no provision for such training in the school, they should insist that such a department be created. The home may do much to further this training, but mothers have a right to demand help in this work from the schools.

The group of girls who greatly need to be reached through schools are daughters of the poorer classes, girls who attend the public schools for perhaps only a short time. They are the girls who find the average academic studies uninteresting, even though they may remain there through the entire high school course. Here the home economics department may hold the trump, and the girl be led through it to fit herself to be a good worker in her own home or in that of another. Girls who have dropped out of school because the type of instruction did not interest them and failed to touch the immediate needs of their daily life, may frequently be persuaded to come back for a course more designed to hold their interest and meet their needs. For example, chemistry or physics may prove a bore to the average girl from that type of family where the parents are more or less uneducated, but when taught along with food studies in the process of cooking as an effective background, interest may be aroused. For the sake of race betterment, the general improvement of the family life of the average American family, and the raising of our standard of living, it behooves men and women who are community leaders to work for education in homemaking.

The public has come to the realization of the need of such training to the extent that legislatures are now studying the best plans for compulsory education in home economics. Under the Smith-Hughes Act, good work has been accomplished. Many towns and cities have organized evening and part-time schools which offer training in homemaking to those who cannot attend day schools; but homemaking will never be recognized as a real vocation unless money is appropriated for this purpose. Men and women of influence must get behind this movement and push it.

Can you not see a curtailment in the practice of both physicians and lawyers when homemaking has become a real art? The semi-invalided housewife, with her partially imaginary ills, is cured through the performance of the simplest housewifely duties. Her mind is diverted from self by interest in the welfare of her family. The exercise furnished by the doing of certain small tasks of the general housekeeping is most beneficial. Many physicians would often advise, if they only dared, for the wife who only thinks she is ill, a little more of living for the family life, a little more of being up and about the home to know what is actually going on. Lawyers know that a knowledge of the wise disbursement of the family funds and more time occupied with household duties on the part of the wife, would save some disgraceful court proceedings which often ruin the happiness of several persons for life.

# Real Sugar Substitute Has Sanction of Government

Reprinted from the *Weekly News Letter* published by the United States Department of Agriculture, Washington, D. C.

Malt sugar sirup is a brand-new sweet which has arrived on a commercial scale at the psychological moment to relieve the sugar shortage, say the specialists of the Bureau of Chemistry, United States Department of Agriculture, who have investigated various substitutes for sugar. In addition to being a sweet, malt sugar sirup has a delicious flavor, somewhat resembling that of honey, which adds much to its palatability and value as a sugar substitute.

## Commercial Production Beginning

While malt sugar has long been known to chemists, its production on a commercial scale is only beginning. Two factors have stimulated its production recently. The shortage of sugar has developed a market for it, and the recent prohibition law has made available both the raw material and machinery needed for its manufacture. Malt sugar sirup is made from the same grains as beer, and may be made from corn or potatoes or any plant containing starch. Barley, which was used until recently in the manufacture of beer, can now be used to produce malt sugar sirup.

Breweries, with very little change, can be used and are now being used for its manufacture. Up to a certain point the process for making malt sugar sirup is the same as the process for making beer. Evaporating pans are the principal additional equipment required by breweries to become malt sugar sirup factories.

## Excellent Substitute for Sugar

Malt sugar sirup looks very much like maple sirup. It can be used for everything that cane sugar is used for. While its use on the table may not be quite as convenient as sugar, it is a most excellent substitute for table use when sugar is not to be had, as it not only provides sweetness but is equal to sugar in food value. For cooking and baking purposes and for making candy it is not only equal to sugar in convenience and food value, but is superior for some uses, because it will not so readily crystallize.

### Used in Manufacture of Candy

Malt sugar sirup is now being sold in large quantities to commercial bakeries and candy and soft-drink manufacturers, who use it in place of sugar. The wholesale price as quoted in recent advertisements in trade papers and elsewhere is from seven to nine cents per pound in barrel lots. Many retail grocers do not handle it yet, because there has been little demand for it on the part of housewives. Grocers can now obtain it, and no doubt will be glad to do so if the demand for it increases. Housewives can well conserve their dwindling supply of sugar by using it in cooking, baking, and homemade confections, and even on the table for sweetening coffee, oatmeal, and desserts. It can be used for every purpose for which sugar is used. If the housewives want it, the grocers will get it.

Although malt sugar sirup is being called upon, so far as household use is concerned, merely as a pinch hitter in the present emergency, the specialists expect that it will make such a batting average that it will hereafter have a regular place in the batting order. This is a case where the substitute makes so good that the regular, whose place it takes, may have to warm the bench. While it is not likely that this new sweet will replace sugar for table use in normal times, it undoubtedly will make a place for itself in the household, as it is doing in the manufacture of food products. It is an excellent, wholesome sirup and, on account of its delicious flavor, is superior to sugar for some purposes in cooking and baking.

# February Recipes

FERN FERGUS

### Soy Bean Soup

¾ cups cooked green soy beans
2½ cups hot water
1 egg yolk
⅓ teaspoon savora
1 tablespoon flour
1 tablespoon butter
Celery salt
Salt

Rub soy beans through a sieve. Mix butter and flour together and add the hot water slowly, stirring constantly; to this add the beans, salt, savora and celery salt. Heat and serve.

### Date Bars

1 egg
½ cup milk
1 cup sugar
1 cup flour
2 teaspoons baking powder
Pinch of salt
1 cup chopped dates
1 cup chopped nuts

Beat egg, add sugar, milk and dry ingredients, sifted together. Add the chopped dates and nuts, pour into an oiled, paper-lined shallow pan and bake in moderate oven about thirty minutes. Cut in oblongs, 1 by 2 inches, and roll in powdered sugar.

### Cocoanut Rice Pudding

½ cup rice
1½ cups water
½ cup shredded cocoanut
2 eggs
⅓ cup sugar
2½ cups milk
Salt

Cook rice in water in double boiler until almost tender, then add the cocoanut and finish cooking rice. Beat eggs, add milk, sugar and pinch of salt. Combine the two mixtures and bake in oiled pan, in moderate oven until custard is set.

### Sweet Potato Pie

1¼ cups mashed sweet potatoes
⅓ cup sugar
½ teaspoon salt
2 eggs
1 teaspoon cinnamon
1 teaspoon nutmeg
1 teaspoon cloves
1 cup milk

Mix sugar, salt and spices. Add the sweet potato, egg, slightly beaten, and milk gradually. Bake in one crust in a quick oven at first, to set rim, then decrease to a moderate oven, as egg and milk combined need to be cooked at low temperature. Bake until custard is set.

# The Mothers' Round Table

**Conducted by MRS. E. E. KELLOGG**

# Right Habits Better Than Rules

Mrs. Ellen H. Richards has said that "The right care of the body must be included among the necessities of education. Correct habits, not rules, are the proper preventions for all sorts of defects. To secure and maintain a healthy body, habits of cleanliness and enthusiasm for health must be inculcated. Such habits can be readily impressed on the body while it is plastic—that is, while it is young; but they are acquired only with difficulty and by much thought in after years. Hence there is the greatest economy of time and energy in accustoming children to habits of daily living which will give them the best chance in after life — the chance to be healthy, happy, efficient human beings."

Children can and should be trained to good health habits from the outset of life. Of course it takes thought and watchfulness on the part of parents, but that is the parents' true province—to mould and guide the child into right ways that will make of him a better man, a better citizen, than he could be if allowed to grow up in some haphazard manner as so many children do. The right order established at the beginning of life can be maintained much more easily than a wrong order can be changed after it becomes a habit. The bodily attitudes a child habitually assumes do much to make or mar his health as also his appearance. Bad posture that becomes a habit with growing children results in bones becoming misshapen as they harden and, not infrequently, in a life-long deformity. The child that is allowed to sit carelessly so that his back curves outward and his head droops forward, cramping his chest in a way that makes it impossible for him to breathe deep and full, and that likewise crowds his stomach and other vital organs out of place, is being handicapped for life by a bad habit.

Parents should inform themselves as to correct body postures and train their children to stand erect, and so to sit and walk as to promote health. It requires much watchfulness and perseverance to do this, just as it does, however, to train the child aright in any particular. Mothers the world over have the same difficulties to contend with. Travelers in the Orient tell us how the Arab mother by constant insistence that her child carry a basket or some other utensil on his head, teaches him to stand and walk with good poise.

Then there is the matter of clean hands. Most mothers see to it that the baby's dimpled ones have the appearance of cleanliness, and insist that the older children wash before meals. But more than this is necessary for safety. Hands become contaminated so easily and so often, that they should be frequently washed. Clean hands and clean finger-nails would save multitudes of children's lives.

To illustrate the value of clean hands we may cite tests made in certain English, French and American hospitals, whereby persons ill with different communicable diseases were cared for in the same wards with persons not having the disease, the greatest precautions being taken at all times by every one having the sick in charge to wash the hands thoroughly after touching any patient, and permitting no object which had touched the sick one to come in contact with another until it had been cleansed. Where this rule was strictly observed there was no spread of the communicable disease.

Keeping the fingers away from the lips, the nose and the eyes would likewise save many an attack of illness. All-over cleanliness of the body ought to become a personal habit with every child. Clean teeth is another habit that all parents should feel a responsibility in inculcating into their children's lives. Then there is the habit so common with people of all ages, that of putting things in the mouth. The germs of some of the most fatal of infectious diseases enter the system through the mouth. Pencils, pennies, marbles and the numerous other things taken into the mouth are always likely to have on them the seeds of some deadly disease because of passing them from hand to hand.

Children can and should be early trained to put nothing in the mouth but food and drink.

Another habit to which the child should be trained is to eat only at meal time. The other day when the grocery boy brought some apples among the day's supplies we offered one to a little five-year-old visitor. It was big and red, and looked so luscious one could see he longed to eat it. He took it with thanks, and bravely going to his place at the table, laid it beside his plate, remarking, "I do not eat between meals." That boy's mother is certainly building well for his future. And she is by no means the only one. Mothers all over the land are waking up as never before to the importance of health principles. Teachers, likewise, are striving with most excellent results to help the children to good habits of health.

# Every Child in School

How hundreds of communities throughout the country have organized against child labor and illiteracy is told in a bulletin, "Every Child in School," just issued by the Children's Bureau of the U. S. Department of Labor. This bulletin describes the methods and results of the "Back-to-School" and "Stay-in-School" campaigns carried on last year by forty-four States and the District of Columbia under the auspices of the Children's Bureau and the Council of National Defense. A large proportion of these States have continued their efforts to stamp out child labor because they have become "aware of the waste of early employment, and are recognizing the fact that many children begin their working lives with only a scant educational equipment and before they have had a chance to develop physically." As a result, school time has been prolonged in many communities for boys and girls who might otherwise have had their education cut short.

The Back-to-School and Stay-in-School campaigns have shown that in many places school attendance and child labor laws are not enforced. Many children were found to be working in violation of the statutes of their States, and many children of school age were in factories, because there was not a sufficient number of attendance officers and factory inspectors to keep them in school and out of industry. In one State it was found that 10,895 children did not go to school at all last year. In a single district an inspector reported 1,700 children as not having had a day of schooling. In many rural districts the children attend school only about half the time, and the hours for rural schools are very short.

It is conditions such as these, the bulletin points out, that make the United States eighth instead of first on the list of civilized countries with regard to the proportion of literacy among the citizens. One out of every ten adults living in cities in the United States can not read or write; one out of every five country adults is illiterate —and the States in which there is a high percentage of illiteracy are the States in which there is a high percentage of rural child labor. There are no laws that prohibit the employment of children in agriculture, and three-fourths of all working children work on farms.

The million or more children who leave school each year to go to work are not all forced into work by poverty. Many of them go to work because they do not realize the advantages of education, or because the schools are not interesting enough to hold them, or sometimes because there are not any schools to go to. In one State the committee in charge of the Back-to-School campaign found that there was a serious shortage of schools in towns and cities. It was estimated that if all the children who should be in school were there, forty per cent of them would have to stand. Some localities have reported schools closed for lack of teachers, and it is reported from all over the country that teachers are leaving school for better paid work. Several States have met this situation during the past year by securing legislation establishing a minimum of $1,000 to $1,200 for teachers, but school teachers in some parts of the country are still receiving as little as forty dollars a month.

But legislation for compulsory school attendance or for higher salaries is not a complete remedy, says the bulletin. Schools must be made "so plainly attractive that boys and girls will want to attend. The results of the Back-to-School drive indicate that the majority of children leave school because they are not interested, and that the school fails to provide the training which meets their needs. If we are to keep children from going to work too early in life, we must provide a schooling which holds their interest, satisfies their needs, and gives them a sound foundation on which to build their industrial life when the proper time comes for them to enter industry."

# Diet of Expectant Mothers

Dr. E. P. Davis, of Philadelphia, advocates the free use by expectant mothers of "the earthy salts and fruit acids contained in vegetables and fruits. Vegetables furnish abundantly substances needed in the development of the skeleton, while fruits and fruit pulp and fruit acids are the best possible laxatives for a pregnant patient, and if used with a free supply of water, they rarely fail to maintain the action of the bowels. Where indigestion is annoying and persistent, the juice of the fresh lime is especially valuable and also that of the fresh pineapple. Acidity and gastric indigestion may be annoying the patient and lead her to believe that she cannot take acids in any form. In estimating the diet of pregnant patients, the very important part played by water must not be forgotten. At least one quart of good water is required in twenty-four hours, and if the patient's metabolism is deficient a mildly saline water will prove of great benefit; but the mistake must not be made in cases where metabolism is deficient, of having the patient drink water in such excess that the kidneys are overcome and cease their function. Fresh air as a means of nourishment is of special importance to the pregnant patient."

# Children Born Out of Wedlock

What rights do the laws of this country give to the child born out of wedlock? What responsibility has the State toward him? What method exists of placing a part of the burden of his support and education upon the father? Can the child inherit property from either his father or his mother? Has he a right to his father's name? Does the subsequent marriage of his parents make him legitimate in the eyes of the law? These and many other questions about the legal obligations of parents and of the State to children born out of wedlock are answered in a bulletin entitled "Illegitimacy Laws in the United States and Certain Foreign Countries," issued by the Children's Bureau of the U. S. Department of Labor.

The English common law, in some respects still unaltered in England and in parts of the United States, regards the child born out of wedlock as the "child of no one." He bears no legal relationship even to his mother, and the subsequent marriage of his parents can not legitimate him. Many of our States have altered the common law by statutes more favorable to the child. One of the most radical departures is found in the North Dakota law of 1917, which declares every child the legitimate child of his natural parents, but which weakens this broad provision by the failure to provide adequate administrative machinery. Minnesota in 1917 passed a law which aims to secure for children born out of wedlock "the nearest approximation to the care, support, and education that they would be entitled to receive if born of lawful marriage." The State board of control is made the child's official guardian.

Provisions were adopted in Virginia as early as 1785, whereby the issue of certain annulled marriages could be made legitimate, and whereby subsequent marriage could legitimate issue, and the child could inherit from the mother. These provisions are not even yet universal in this country. Four States have no provision for legitimation by subsequent marriage, and many limitations are placed upon the right of children of annulled or void marriages to be considered legitimate.

Attention is called in this report to the fact that our legal provisions for the support of the child born out of wedlock are inadequate—the payments prescribed are often too low, and in most of the States the period of support is too brief, sometimes reaching only to the child's 10th or 12th year. In one State only a single payment of $50 is required; in another $90 distributed over three years is required. The two most liberal States have allowances that total, in one case, $2,750 for the first 18 years of the child's life; and in the other, $1,750 for the first 11 years of the child's life.

The report suggests that illegitimacy legislation in the United States might be improved by uniform provision for the establishment of legitimacy; the legitimation of children of null or subsequent marriages; possibility of adoption by the father; and declaration that the relation of mother and child is the same whether the child is legitimate or not.

In addition to a critical analysis of illegitimacy legislation in this country, the report contains an analysis of certain phases of the various State laws in tabular form, the complete text of all the State laws, the illegitimacy provisions of the Codes of France, Germany and Switzerland, and a reference index to the U. S. illegitimacy laws.

# Our Island Children

That the United States has not quite lived up to its duty as a foster parent is brought out by the Seventh Annual Report of the Chief of the Children's Bureau, U. S. Department of labor. This report states that very little is known of the children of our island possessions, and it urges that the needs of these children who are legally under our protection, be made a subject for official investigation. This is urged especially for the children of Porto Rico and of the recently acquired Virgin Islands.

Such meager facts as are available indicate that the lot of children in these islands is not altogether a happy one. In Porto Rico, which has been for twenty years under our protection, there are, according to the last report of the insular chief of police, "about 10,000 homeless children under twelve years of age who live by whatever means they are able, many of them begging or stealing, and most of them having no permanent lodging place, sleeping at night in boxes or on doorsteps, or wherever they happen to find a lodging place secure from the rain. These children are for the most part deserted and abandoned children of illegitimate parentage or orphan children whose parents have left no provision for their care and education, and they constitute a fertile soil for the implanting of criminal tendencies and are ready material for older people of criminal habits." In spite of the magnitude of the problem, no provision has been made in Porto Rico for the care of abandoned children, and the facilities for the care of delinquent children are inadequate.

The baby that is born in Porto Rico has not nearly so good a chance of survival as he would have if he were lucky enough to be born in the States. In 1917-18, 173 babies out of every thousand born in Porto Rico died before they were a year old. Though this death rate (173.4) was lower than that for the preceding year, which reached almost 200, it is very high compared with the rate for the United States, which in the same year was ninety-four, and with that for New Zealand, which has a rate of forty-eight—lower than that of any country in the world.

One of the great problems in Porto Rico is that of illiteracy. Though the illiteracy rate has dropped perceptiby since our acquisition of the island in 1899, when four-fifths of the entire population over ten years of age, and 82.1 per cent of the children between ten and fourteen could not read or write, it was necessary at the time of the census of 1910 to classify two-thirds of the entire population and half of the children between ten and fourteen as illiterate.

The Virgin Islands have so recently come into our possession that very little information is available concerning the children who live there. They, too, undoubtedly, have the handicap of illiteracy, though perhaps not in so great a degree as the children of Porto Rico. In 1917, when we acquired the islands, one-fourth of the population over ten could not read or write. The latest available rate for the United States, the purchasing country, was seven and seven-tenths per cent; and that for Denmark, the selling country, was two-tenths per cent.

The census report of the Virgin Islands does not give the exact infant mortality rate, but states that the rate is very high. A contributing cause to this high rate probably is to be found in the fact that large numbers of married women are gainfully employed.

A study of the conditions surrounding mothers and children is necessary to securing more satisfactory living conditions.

# Mothers' Pensions

Remarkable progress has been made in legislation providing mothers' pensions since the first mothers' pension laws were passed in 1911 by Missouri and Illinois. According to a bulletin entitled "Laws Relating to Mothers' Pensions," just issued by the Children's Bureau of the U. S. Department of Labor, 39 states, Alaska, and Hawaii now have some public provision for mothers left with young children to support, and in at least 5 of the remaining states mothers' pension laws have been under consideration. Canada, Denmark, and New Zealand also have passed legislation providing aid for mothers. This rapid spread of legislation in so brief a period is indicative, says the Children's Bureau Bulletin, of a widespread and deep rooted conviction that no child should be deprived of home life and a mother's care because of poverty alone.

Generally speaking, all mothers' pension laws provide for the payment of a stated weekly or monthly sum for each child under a certain age to mothers who are dependent upon their own efforts to support their children and are morally and physically fit persons to bring up their children. There is considerable variation in the laws in force in the different states. Some states provide pensions only for widowed mothers; others include women who are divorced or who may have been deserted by their husbands, or those whose husbands are in prison, state asylums, or who are otherwise incapacitated. In three states, expectant mothers may receive mothers' pensions; and in a number of instances the mothers of children born out of wedlock come within the scope of the law.

The age up to which an allowance may be made for a child varies from 13 to 17 years. Only one state has a 13-year maximum, but this state allows an extension to 16 years if the child is ill or incapacitated for work. Sixteen years is the maximum in the greatest number of states. One state and Alaska give 17 as a maximum and one other state with a 16-year limit for boys makes 17 a maximum in the case of girls.

The amounts of the allowances vary greatly in the different states; they range from $2 per week per child, to $25 a month for one child and $15 for each additional child. In many states the amount is far too low to maintain a decent standard of family life, particularly in view of the greatly increased cost of living. It is encouraging to note, however, that the newer laws and more recent amendments, with few exceptions, are in the direction of making more liberal allowances and of raising the age limits of the children who may be aided to keep pace with advances made in child labor and compulsory education laws.

The bulletin contains the complete text of the laws concerning mothers' pensions in force in the United States, Canada, Denmark, and New Zealand, together with rules and regulations issued in connection with their administration and the forms of application used in various localities. It also contains a list of references on the subject of mothers' pensions. An introductory discussion gives a succinct history of mothers' pension legislation and briefly summarizes the provisions of the laws in force in the United States.

# MEDICAL PROGRESS

# Superior Quality of the Protein of the Peanut

Carl O. Johns, of the U. S. Agricultural Department, contributes to the *Cotton Seed Press* an interesting article detailing the results of an official investigation of the value of the proteins of the peanut which have been conducted at Washington, at the University of Wisconsin and at the Connecticut Agricultural Experiment Station. A complete analysis of the proteins of the peanut has been made, together with exhaustive feeding experiments. The verdict is that the peanut is extraordinarily good food.

"Proteins are made up of amino acids. These are the building blocks, not of the proteins, but of the living tissues of the human body and of all animals. All vitalized animal tissues of course contain the full number of building blocks, the so-called amino acids. But most vegetable proteins do not contain all the necessary blocks. One or two, or even more, are likely to be lacking or present only in insufficient quantity.

"Others contain small quantities of the necessary amino acids in such proportions that they will serve to maintain the weight of the animal, but produce very little growth. Still other proteins, such as those in milk and meat and other animal products, as well as in certain seeds, such as the peanut and the soy bean, will give all the necessary amino acids in such proportions that normal growth can be obtained. Some of the proteins in our different cereal grains contain very small quantities of the essential amino acids, and it is for this reason that they have to be supplemented by various concentrates which contain the missing amino acids in considerable quantity. From this it is evident that the percentage of nitrogen multiplied by the factor 6.25, while giving approximately the percentage of protein in a diet, does not show the quality of the protein nor of its nutritive value.

## Proteins Analyzed

"The proteins of the peanut have been investigated by the Bureau of Chemistry, and the principal protein in this seed has been analyzed completely and found to contain all the amino acids which are essential.

"The nutritive value of a protein may be ascertained by properly planned feeding experiments. Small animals are used for such work, because the use of large animals is very costly and the results are obtained too slowly. The animal commonly used is the white rat. This grows to its full size in less than a year, and has been studied extensively, so that its rate of normal growth is well known. A good protein should produce normal growth when fed together with the other ingredients of a properly balanced diet. Peanut flour made from the press cake has been tested in this manner, and found to contain proteins which produce normal growth. This work has been done at the University of Wisconsin and at the Connecticut Agricultural Experiment Station, as well as by the Bureau of Chemistry. When peanut flour is fed as the only source of protein in an otherwise adequate diet, the animals grow at a normal rate. The value of peanut meal as a stock and poultry feed is too well known to need discussion.

"A number of mills are now pressing shelled, blanched peanuts in order to obtain a high-grade virgin peanut oil. The press cake thus obtained is what is known as 74 per cent extraction, which means that the flour contains 74 per cent of the wheat kernel. The rats fed on the wheat bread diet grew slowly and did not attain normal growth, while those fed on bread containing 25 per cent of peanut flour grew at a normal rate throughout the experiment. Wheat bread does not supply a very high percentage of protein, and some of the proteins in wheat are of a poor quality. The peanut flour added to the wheat not only increases the percentage of protein in the bread, but also adds proteins of a high quality. More than 25 per cent of peanut flour with wheat flour does not make a satisfactory loaf. In a great many communities bread is a very large part of the human dietary. It is therefore essential that bread should be as nutritious as possible. Since bread made from a mixture of peanut and wheat flours is more nutritious than bread made from wheat alone, it should be given careful consideration, particularly in feeding children, who need considerable protein of a high quality in order to grow normally.

### Not Hard to Digest

"Peanuts are believed by some to be difficult of digestion. This is not true of peanut meal or flour or of peanut butter. The peanut itself is also easily digested if properly masticated. It must be remembered that peanuts are a very concentrated food. A pound of shelled peanuts contains about 2,500 calories, or sufficient energy for a grown person for twenty-four hours. When peanuts form a considerable part of the diet, there should be a corresponding reduction in the quantity of other food consumed.

"Digestion experiments on peanut flour have been made by the Office of Home Economics of the Department of Agriculture. The flour was fed to ten men in the form of biscuits which contained a much higher proportion of peanut flour than would ordinarily be used in a diet. The results show that the digestibility of the peanut proteins is about equal to that of the cereal proteins. The following digestibility coefficients were found for some of the different ingredients of the peanut. The figures are given in per cent:

| | |
|---|---|
| Protein | 89 |
| Fat | 96 |
| Carbohydrate | 97 |

"The experiments cited above show that the peanut is a valuable food. It is not only rich in proteins, but those present contain all the essential amino acids in proportions which will promote normal growth without the addition of other proteins."

# Harmful Agar Preparations

*The Journal of the American Medical Association* recently very wisely called the attention to the fact that the use of agar combined with laxative drugs is objectionable, not only because it is impossible to increase the dose of agar without also increasing the dose of the drug combined with it, but also because in many cases the use of agar must be continued for a long time, or even indefinitely, which would be entirely harmless in the case of the agar, but would result in certain injury in the case of the drug.

All drugs which stimulate the colon are

irritants. They produce a spastic, or contracted condition of the colon, and aggravate colitis, or even produce this disease when it is not already present. This spastic or contracted condition of the colon is one of the most frequent causes of obstinate constipation. For this reason, the use of cascara sagrada, phenolax, or any other drug in connection with agar, is highly objectionable, and will only result in rendering constipation more obstinate.

The combination of laxative drugs with agar in no way lessens their bad effects. Agar cannot be considered as a drug; it is an accessory food, differing in no sense in particular, except in its form, from certain of the constituents of the fruits and the vegetables of our ordinary diet. It should be taken by itself, and usually requires no other accessory aid than mineral oil in some form, to serve as a lubricant.

Laxative drugs of any sort, while giving temporary relief, serve to counteract the good effects of agar, and on this account should be avoided.

It may be safely said that constipation is never cured by the use of laxative drugs, but is always made worse by the use of these irritating agents.

# Alfalfa As a Table Vegetable

It has long been known that the leaves and buds of plants are much richer in protein (albumen) than root vegetables. This is particularly true of leguminous plants, among which are found alfalfa and the various clovers as well as those commonly raised in our gardens, the bean, pea and lentil.

Some years ago Leunis called attention to the alfalfa "as a savory spring vegetable." During the war, Haberlandt, a world famous botanist, made a special study of this plant, the results of which have been recently published. It is found that the tender leaves of alfalfa, which constitute about 40 per cent of the weight of the green parts of this plant, are not only twice as rich in protein (8 per cent) as cabbage and spinach, but when properly prepared, form a very tasty and digestible table vegetable.

According to Molisch, the protein is chiefly found in the chlorophyl grains of the leaves. Haberlandt gives the following method for demonstrating the richness of protein in the alfalfa leaf (Sci. Amer. Supplement, No. 2887, page 289) :—

"The leaf is placed in boiling water for one minute and the chlorophyl is then extracted in warm alcohol until the leaf appears to be white; if it then be placed in freshly prepared Millon reagent after the lapse of a few hours it exhibits a *dark brick red color;* fully developed leaves exhibit a somewhat more intensive color than young undeveloped ones. A leaf of red cabbage treated in the same manner is much less intensively colored than the leaf of alfalfa, in spite of its much greater thickness. Spinach leaves are colored a much brighter red."

Alfalfa contains about 8 per cent of soluble non-nitrogenous substance, much of which must be lost in the preparation. Leaves gathered in the morning are wholly free from starch. Toward evening the foliage is very rich in starch.

As gathered, the leaves contain much crude indigestible fibre, about 4.5 per cent, while cabbage contains 1.3—1.9 per cent, spinach .94 per cent and asparagus 1.15 per cent. The method of preparation, however, largely excludes the indigestible element. The method recommended by Haberlandt is to boil the leaves in several waters to remove bitterness, then rub through a hair sieve, and serve the same as spinach. The midrib and stems of the leaves are removed before cooking.

# Diseased Teeth a Symptom of Scurvy

Zilva and Wells recently reported in the Proceedings of the Royal Society the results of extended experiments conducted by them at the Lister Institute in London. They produced scurvy in guinea-pigs by feeding them upon a scorbutic diet, and then made a special study of the effects upon the teeth. They found that when other symptoms of scurvy were so slight that they could barely be discovered, the teeth, without exception, showed very marked changes in structure. In advanced cases of scurvy in guinea-pigs and monkeys the teeth were not found to be decayed, but were so loosened by absorption of the cement membrane of their sockets that they were of no use, having the characteristic appearance of senility. These changes in the teeth were not the result of inflammation but were due to malnutrition. The normal cells are replaced by a fibrous structure. The changes seem to begin at the top of the bulb of the teeth, working downward to the apex of the roots.

The fact that the teeth are the first organs to be affected by scurvy leads straight to the inference that incipient scurvy may be the cause in a great number of cases in which the teeth are diseased but this cause has not been suspected. It seems very clear that there is a marked relation between diet and diseases of the teeth, not only in relation to the lime content of the food but also in relation to the vitamin content. When food lime is deficient,—a dietetic fault which is almost universal,—the structure of the teeth must naturally suffer; but it seems from these recent experiments that the lack of antiscorbutic vitamins may also be a potent cause of teeth decay. A recognition of this fact will lead to the greater consumption of oranges, lemons, tomatoes and other foods rich in citric acid and the nutrition-promoting vitamins which are commonly associated with fruit acids.

# Health Conditions in Europe

Sanitary conditions in New York State are far in advance of those of Central European countries, according to investigations made by State Health Department officials while in service abroad.

Lack of proper organization of health activities, inadequate water and sewerage systems, and failure to report births and deaths all have conduced to a high sickness and death-rate in some of the older countries of Europe, according to a recent issue of the *Health News,* the official organ of the State Health Department. These conditions are to receive the attention of the League of Red Cross Societies which will have its headquarters at Geneva.

The cost of many hospitals in France and Great Britain might have been saved had proper action been taken to drain the swamps of Italy and Salonika, according to Col. Folks, a member of the Public Health Council of New York State. Malaria alone was responsible for the prolonged disablement of many thousands of troops.

Health methods in Germany, while apparently efficient, are not so far advanced as those of New York State in the opinion of Dr. Lindly Williams, former State Deputy Commissioner of Health.

## The Body Makes Glycerine

Dr. Halliburton, the eminent professor of physiologic chemistry at King's College, has made an interesting discovery which may some time prove of value in saving human life. During the war, the consumption of fats in the preparation of glycerine for explosives has been so great that the people have suffered for lack of this food element. A fat consists of a fatty acid combined with glycerine. The fatty acid was left as a waste product. Dr. Halliburton found that one fatty acid left after the glycerine has been separated, takes the place of fat, when fed to rats. Experiments were then made on young men with equally good results. The body makes its own glycerine, probably from starch or sugar.

The value of this discovery may be lessened by Dr. Hindhede's discovery that a man may live, work and apparently enjoy perfect health, though living for many months wholly without fat except the small amounts found in such foods as bread, potatoes and greens.

## Influenza and Tuberculosis

Probably at least 95 per cent of the adult population of the country have at some time been infected by tuberculosis. In the majority of cases a definite cure has taken place; but in a considerable proportion the disease, while latent, still remains, and may on provocation take on an active form and become rapidly progressive.

"Competent medical authorities are watching with concern the harm that an attack of influenza may do to previously existing tuberculosis, which may be totally or partially inactive, as well as its development in persons previously believed to be free from it.

"Every person who has been ill with influenza and who has failed to make a reasonably prompt and complete recovery, is urged to take proper precautions on the appearance of symptoms which seem closely related to those of tuberculosis and which often require repeated examinations by expert physicians in lung diseases to make the distinction between the two. Prolonged influenza, coughs, and other symptoms may not necessarily be due to influenza, but to tuberculosis which has been developed by an attack of influenza."

## Effects of Fatigue on the Circulation

Bruns reports (*Munch. Med. Woch.*) observations indicating that in fatigue the heart is slightly dilated, and its action becomes irregular. Chronic fatigue causes atrophy of the heart.

"In the vessels local muscular fatigue produces a decrease in the vasomotor reactions to thermic stimulation. On the other hand, central influences (mental calculation, the sentiment of joy or displeasure) produce an equal reaction in both the fatigued limb and the fellow member which has not been tired. From the qualitative viewpoint, the vascular reactions in the state of fatigue are normal, and only a deviation of the reaction takes place under the following circumstances: A tired subject is ordered to resume work, in which case, instead of the usual vaso-dilatation taking place before muscular effort occurs, there is a vasoconstriction which the writer attributes to a strong feeling of resentment experienced by the subject when receiving the order to work."

## Soldiers Discard Tea and Coffee

Smith and Bovaird in an article on "Irritable Heart" in the December number of the *American Journal of the Medical Sciences* mention that among fifty soldiers suffering from irritable heart seven were found to be non-users of coffee and only one used more than three cups of coffee a day.

The writers remark, "Doubtless this moderation or dislike is determined largely by the results of experience, in that the men find they are more comfortable without this particular form of stimulation."

## Anthelmintics

Drugs which destroy intestinal worms are known as anthelmintics. It has been ecently found that the common earth worm affords an excellent means of testing he value of a drug as an anthelmintic. Those remedies which will not destroy earthworms are ineffective. Unfortunately hose drugs which are certain to destroy he parasite are more or less dangerous. On his account the treatment of intestinal parasites is often attended by failure. This s especially true in the treatment of children, for the reason that a tapeworm in a child requires as large a dose to destroy it as one in an adult, whereas a child will be made very sick, and even liable to suffer a fatal collapse, from a dose which an adult might take with impunity.

## Open Air Treatment Increases Vital Resistance

The open-air method is successful in the treatment of lung tuberculosis or consumption only because it increases the fighting power of the body so that it is able to resist the disease and set up an efficient recuperative process.

Markol has found the open-air method equally successful in the treatment of anemia following severe hemorrhage, in severe sepsis and in other severe affections. In time, the out-of-door method will be regarded as essential to success in the treatment of nearly all disorders, no matter what accessory measures may seem to be necessary.

## The Electric Light as a Curative Agent

J. R. Bingham reports in the *American Journal of Electro-therapeutics and Radium* great success in the treatment of a variety of ailments by means of the electric light:

"The healing in one month of chronic leg ulcers which had been seen in various hospitals for years with no benefit is reported. Facial acne and nearly all skin eruptions are cured or benefited by the treatment. Satisfactory results are reported in postoperative ileus, tympanitis, and abdominal pain. Varicose veins are also reduced by treatment. A case of facial erysipelas which had not received treatment for several days and in which one eye was almost closed by the swelling was cured. The light was applied for an hour five or six times the first day and less often the second day. The pain was relieved by each treatment and the swelling and redness began to recede at once. The last trace of the disease to disappear was the swelling of the ear, which disappeared on the third day."

## The Spanish Bayonet as a Food

The Yucca, or Spanish bayonet, is a curious desert lily which grows on the barren rocky hillsides of the southwestern parts of the United States. After the second or third year from the seed, the plant sends up a flower spike six to fifteen feet in height, which may bear as many as 5,000 waxen bells an inch in diameter, a wonderfully beautiful object in the landscape.

The Indians obtain from the Yucca leaves a fine fiber of which they weave a soft cloth, and eat as a staple food the ripe seeds. The tender young spike they roast with hot stones, and consider it a great delicacy.

## Saving the Babies

The city of Newark has attained the proud distinction of having the lowest infant mortality rate of any large city in the United States. In 1910 the infant death-rate in Newark was 123 per thousand. During the first six months of 1919 the infant mortality rate reached the low point of 77.1. St. Louis, next in order, has a death-rate of 84.2, and New York a rate of 87.2. The great reduction in the death-rate in Newark, amounting to more than one-third, is entirely due to the systematic work which has been done in child hygiene. This work ought to be undertaken by every State Board of Health in the country.

# PUBLISHER'S LETTER BOX

### Constant Reader at Ninety

James L. Collingwood,
*Plymouth, Mass.*

“‘In my ninety-first year of age, I am glad to renew my subscription for Good Health, of which I heartily approve, and which I have taken for many years.”

### Thirty Years a Subscriber

Theodore Wild, M. D.,
*Chicago, Ill.*

“It is about thirty years since Good Health began to come to my library table, and I confess its gradual development causes me great pleasure and satisfaction, and I feel an increased regard for the editor. May he hold high for many years more the flag of *“Vis mediatrix naturae”* and benefit suffering mankind.”

### Beneficial and Interesting

C. A. Hardwick,
*Lakeland, Fla.*

“I want you to know that I get great health benefits from your publication, besides enjoying the interesting features it contains.”

### A Fine Record

C. Zimmerman,
*Yamhill, Ore.*

“I am past seventy-one. Am doing all my own work and have not had a day's sickness since I took Good Health. I give Good Health credit for it.”

### Thankful For It

Mrs. N. J. Glendenning,
*Ironton, Ohio.*

“To me, Good Health is part of my life, and I am thankful that I am fortunate enough to secure such a magazine.”

### Thirty-five Years a Subscriber

Mrs. Henry Thompson,
*Chicago, Ill.*

“For the last thirty-five years I have been a reader of, and a subscriber to, your valuable journal, Good Health, and followed largely its biologic teachings. Can say your publications at all times are clean and fine.”

### A Subscriber for Thirteen Years

C. A. Pattillo,
*Billingsley, Ala.*

“I have been a subscriber to Good Health Magazine for about thirteen years. I began taking it when about thirty-four years of age. My health has never been especially good, and was gradually growing worse, but since I have been studying the principles advocated by your magazine, and living, to the best of my ability, in accordance with them, my general health has been growing better and is still improving slowly. To live biologically, as you advocate, is also of financial benefit, inasmuch as it saves medicine and doctor's bills and keeps one constantly in fit condition to do his daily work. I get a new idea in almost every issue of your magazine that is of material benefit to me.”

### Twenty Years a Subscriber

Joseph Jessop,
*Coronado Beach, Calif.*

“I have been a subscriber to Good Health for about twenty years. Wish you success with the magazine that has been of so much benefit to me.”

### Indispensable

J. H. Carter, D. D. S.,
*Cohoes, N. Y.*

“Good Health is indispensable.”

GOOD HEALTH

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# Speed Up

Within a month winter's icy fetters will be broken by the warming rays of the vernal sun, and the earth's latent life will spring forth as by the magic of Aladdin's lamp. Nothing could be more inspiring and heartening than what every springtime spreads before us. A whole hemisphere covered with a green grass carpet overnight! The energy which pushes up each little blade of grass into the fresh air and the warming sunlight is everywhere pervasive. The birds, the bees, the millions of bugs and worms and tiny creatures of every description thrill with life and swarm forth from their secret hiding places to fill the world with enchanting harmonies which the virtuoso seeks in vain to imitate.

And the same life is within us, seeking to energize and electrify and prod us into the normal springtime activity which moves the whole world and speeds it up. If we do not feel the thrill of it, and find ourselves springing to our tasks with a new zest and a reenforced energy, it is because we are adumbrated and flabbergasted, narcotized and stupefied, by the toxins and ptomains and various depressing inhibiting poisons which are bred in us by the bad habits which we cultivate. Unbiologic living is the world's greatest handicap. The world's greatest need is some Hercules who will lift from off our shoulders the prodigious burden of unnatural appetites, energy-wasting, nerve-benumbing, mind-befuddling, soul-polluting, life-destroying practices which a perverted civilization has loaded upon us.

With the opening of spring, when the buds are bursting and every hilltop is crowning itself with the glory of a new life, why not start a new era in your own life? Look into Nature's book and learn how to live biologically. The result will be a revelation to you. This is what a New York editor did just a year ago; and see what happened to him. He tells the story himself (Mr. Henry T. Finck, of the *New York Evening Post*), in the *Evening Post Saturday Magazine* for Dec. 6, 1919, from which we quote the following paragraphs:

"I became painfully emaciated; my complexion was sallow, my heart irregular; often I lay awake all night, wondering why. It was one d——d thing after another, and I feared the future. My friends could see death painted in my face, and so could I when I looked in the mirror.

"That was ten months ago. Today I am as healthy as a mountain trout, as happy as a skylark. I gained sixteen pounds in sixteen weeks, and now I sleep eight or nine hours without a break, eat anything I please, work with zest, long for a trip round the world, and make an infernal nuisance of myself by telling everybody I know—men, women and children — about the hygienic methods which have, in these few months, made me look and feel twenty years younger, while reveling day and night in the exhilarating, voluptuous process of rejuvenation.

"When a man looks and feels twenty years younger, he *is* twenty years younger; for age is not a matter of years, but of health, vitality and vigor."

# The Danger of Leanness

Chronic emaciation is, in by far the great majority of cases, a positive indication of disease, and one that should receive prompt and thoroughgoing attention. The lean man or woman who says, "I cannot gain an ounce of flesh, no matter how much I eat," has good reason to feel concerned about his condition. There is evidently a serious defect in his nutritive processes. Just where the fault lies it is not always easy to say, but the fact is patent that something is seriously wrong.

Modern investigations have thrown great light upon this question. One of the most important facts established by modern inquiry is the relation of intestinal bacteria to this common though generally ignored condition of defective nutrition. Combe and others have called attention to the general presence of emaciation in connection with intestinal autointoxication. They have shown that the development of putrefactive processes in the intestine and particularly in the colon, which Metchnikoff and his school have so thoroughly studied and to which they attribute premature old age, arteriosclerosis and a long list of ills through the poisons which are engendered, produce derangements in the activity of the liver and in the general metabolic processes whereby tissue building is interfered with and emaciation is the natural result.

A large proportion of emaciated persons suffer from either constipation or looseness of the bowels. In quite a large proportion of cases there is evidence of a catarrhal condition of the intestines, as shown by the discharge of larger or smaller quantities of mucus. Not infrequently there is a condition commonly known as acid dyspepsia, indicated by heartburn or sour stomach and allied symptoms. There is often a sallow appearance of the skin, a coated tongue, a bad breath and other symptoms which result from the long-continued absorption of poisons produced in the intestine by putrefactive processes.

In these cases the adoption of an antitoxic dietary and other means whereby intestinal putrefactions are notably diminished or suppressed is almost invariably followed by a decided gain in weight. As the tongue clears and the skin resumes its natural hue, there is an increase in weight. It is not an uncommon sight to see emaciated patients, when placed upon a course of antitoxic diet and treatment, gain at the rate of half a pound to a pound or more a day. A gain of ten or twelve pounds a week is not an unheard-of result in these cases, with a commensurate gain in strength and well-being.

A popular error in relation to the proper diet for lean persons is that the patient should take more butcher's meat. Beefsteak and lean meat in general are quite incapable of producing fat. In fact, a meat diet is about the worst thing possible for a lean person. Flesh foods encourage the intestinal putrefactions to which leanness is very commonly due. Meat contains the bacteria which produce putrefaction, and at the same time furnishes the best possible material for promoting the growth of these parasitic organisms. Undigested remnants of food remaining in the lower bowel necessarily undergo putrefaction. The warmth and moisture, together with the countless millions of putrefactive organisms present, offers the most favorable conditions possible for the development of putrefactive processes. On the other hand, a fruit and farinaceous dietary, especially a dietary consisting chiefly of nuts, fruits, and cereals, with care to include at each meal a certain amount of uncooked foodstuff such as tomatoes, apples or other fresh fruit, simple salads prepared with lemon juice,—not vinegar, which everybody knows promotes leanness,—and care to masticate the food thoroughly, are in the highest degree calculated to secure a gain of flesh.

# It Pays to Be Good

Mr. Harry Scull, a member of the Chicago Board of Trade, where he has pursued his strenuous calling for more than forty years, reports himself in perfect physical condition at the age of seventy-four years, a felicity which he attributes to the fact that for many years he has been a subscriber to Good Health and has followed closely the principles set forth in this journal.

Mr. Scull states that he has not taken a cup of tea for more than fifty years or a cup of coffee for more than thirty years. He gave up alcoholics twenty years ago and smoking forty years ago.

He says, "So you see by abiding by your splendid guidance, I have been able to conquer the tobacco habit and other things that are not conducive to the uplifting and good of the race."

Mr. Scull permits us to publish the following letters from his physicians. The first is from Dr. King, his family physician, who, in addressing Mr. Scull, says, "I enclose a flattering letter from the surgeon, with whom I heartily agree. I will put you against any man in Cook County of fifty-two for juvenility of organs and cleanness of tissues."

The letter here referred to was written by Dr. C. Edward Sayre, who says in a letter to Dr. King: "I want to thank you for sending me such a nice patient as Mr. Scull. When you told me you were going to send me a patient seventy-four years old, with double inguinal hernia, for operation, I thought he should go the few years he had left with the hernias, but after examining him carefully, taking his blood pressure and the condition of his arteries, I found him to be like a man of fifty-four instead of seventy-four, and consented to operate on him.

"I never saw a patient at any age stand an operation or make a better or quicker recovery.

"I have never seen a man of his age in as good physical condition. This is all the more remarkable when we consider his having a foot amputated five months ago. I lost a foot forty-one years ago, and Mr. Scull was walking better the first week he was wearing an artificial leg than I was in three years."

# The Waste of Milk

Milk is a highly important foodstuff because it supplements other foods. It is rich in all the essentials of nutrition except iron. It is very rich in lime and vitamins, two food essentials which are deficient in many of our common foodstuffs.

By themselves, most breakfast foods are deficient foods. Corn meal, corn flakes, hominy, are all very defective foods, because they lack lime and vitamins and because zein, the protein which they supply, is so "incomplete" that it is worth less than half its face value as a blood- and tissue-building food. With the addition of milk, even skimmed milk, all these defects disappear. Corn meal mush and milk is a complete food. The same is true of buttermilk and potatoes. The addition of "greens" leaves nothing at all lacking, for this will insure an abundance of iron.

There is produced annually in the United States 84,611,000,000 pounds of milk, sufficient to supply to each one of our 110,000,000 citizens, old and young, one quart of milk a day, but, less than half of this goes to the consumer as whole milk, barely forty-three per cent or about fourteen ounces per capita. This is quite insufficient to make good the deficiencies of our national bill of fare, which needs an average of twenty ounces a day for adults and a quart for children.

# Sheep Crazed by Coffee

A magazine writer, who is evidently in the pay of the coffee vendors, tells the following remarkable tale about the origin of the use of coffee:

"'Once upon a time, way back at the close of the third century, some monks fled from the persecutions of the Egyptian Pharaoh, taking refuge in the highlands of Abyssinia, where they supported themselves by their flocks and agriculture, goes the story in 'Folk Lore of the Holy Land.'

"One night one of the brethren, whose turn it was to care for the sheep, went to the prior and very excitedly told his leader that his flocks would not go to their fold. They kept frisking about in such a lively manner that he feared that the enemy had bewitched them.

"Several days of prayer brought no relief, and finally the leader of these refugees decided to herd the sheep himself. As he led them out to pasture, he watched carefully to see what they ate.

"He noticed that every one of the herd ate the leaves of a certain unfamiliar shrub, which, he concluded, accounted for their restlessness. Then he chewed some of the buds himself, and discovered that he was better able to keep awake for the long night services of his form of religion. In short, coffee was discovered."

If the above story is true, it is no wonder that the Arabs called the aromatic berries kahwek (pronounced kahveh), meaning an intoxicant. Coffee gives rise to intoxication as much as does alcohol, opium or any other drug.

# Dietetic Moonshine

The amount of unscientific teaching put forth in relation to food and eating is simply prodigious.

In Burma, when a man puts forth an original composition, he says, "I pulled it out of my own stomach." This seems to be the place where a good many medical writers go for their information on dietetics, instead of to scientific authorities.

A recent writer claims "that faulty intestinal digestion causes adenoids." "The chief fault," according to this writer, "lies with cereal foods, which are consumed in a spongy, pappy, and pultaceous form. We eat too much spongy (noncrusty) bread and pultaceous puddings, and too little raw vegetable food in the shape of salads and fruit. As a result of this kind of diet the maxillary apparatus (including the nasal passages, nasopharynx and salivary glands) does not develop properly; the local flow of blood and lymph is not adequately stimulated; starchy foods do not undergo adequate salivary digestion; and an excess of wholly non-digested starch (as well as of sugar) passes into the bowel, there to give rise to indigestion and putrefaction (as shown by the malodorous dejecta). Then follow toxemia, malnutrition, diminished resistance to infection, catarrh, and adenoids."

We quite agree with this writer that children, as well as grown people, eat too little fruit and too little fresh uncooked material in the shape of salads or other greenstuffs. But starch cannot be, as the writer supposes, the cause of putrefaction. Neither is the putrefaction due to the use of soft, pultaceous foodstuffs. The malodors mentioned are due to the putrefaction of undigested remnants of protein; the eggs and meat which these youngsters eat, rather than the bread, puddings, and breakfast foods, are the cause of the putrefaction and malodors of the low vital resistance which is the predisposing cause of adenoids and other infections in and about the mouth.

# Danger from Diseased Meats

The Michigan Bulletin of Vital Statistics, sent out by the State Department, gives us some interesting facts respecting the meat inspection service of the United States.

At the last meeting of the American Public Health Association, Dr. John R. Mohler, Chief of the U. S. Bureau of Animal Industry, explained about the meat inspection service carried on by the Federal Government. Dr. Mohler stated:

"The inspection is needed, as the facts show, and as all who are familiar with the average slaughter-house conditions will quickly admit."

According to Dr. Mohler, inspection is carried on in only 230 of the thousands of cities in the United States.

According to the annual Bulletin of the Bureau of Animal Industry, there were slaughtered in the United States in the year 1918, 107,000,000 animals, making the average number of animals killed daily, for each one of the 310 working days of the year, 345,000.

For the examination of these thousands of animals, before and after they are killed, the Government provides 2600 inspectors, giving to the average inspector the task of examining minutely each organ of the body of more than 100 animals daily. It is evident that anything like a thoroughgoing inspection is, under the circumstances, absolutely impossible.

Dr. Mohler tells us that one-third of the meat used in the United States is without Federal inspection because used in the State in which the slaughter-house is located. And yet, this imperfect inspection of two-thirds of the animals killed, leads to the condemnation every year of more than 200,000 diseased creatures, which means, according to Dr. Mohler, that not less than 106,000 animals unfit to be used as human food were consumed last year in this country; and, in fact, Dr. Mohler insists that the number was much greater than this because of the natural tendency to send to uninspected slaughter-houses animals so diseased as to be sure of condemnation at Federal inspected plants.

Dr. John Roberts, also of the Bureau of Animal Industry, stated that in a survey of 1,400 cities, only 195 were found to have any sort of meat inspection, and in most of these no effort was made to maintain the Government standard.

Only nine cities were found to have anything like adequate provision for the inspection of meats.

It is evident that in the use of meats the public is exposed to a constant and very menacing danger to health. Hogs are now so generally infected by trichina that the United States has repeatedly sent out warnings to the public that no pork should ever be eaten without thorough cooking. Boiled or fried trichina are, of course, more acceptable as a delicacy than live and wriggling ones.

It must be borne in mind that the remarks of Dr. Mohler refer only to gross forms of disease. An officer of the Bureau of Animal Industry some years ago testified before a Congressional Committee that if all the animals diseased in any part were rejected, not more than one in a hundred would be passed as fit for food.

It is further to be borne in mind that even under the most favorable conditions meat is a very questionable article of food, for the reason that it is always more or less advanced in decomposition through being kept so as to allow it to become tender.

# The Opinion of a Business Man about Cigarette Smoking

The editor of the *Michigan Tradesman,* Mr. E. A. Stowe, contributes to his journal the following excellent presentation of the attitude of the non-smoking business man towards cigarette smoking:

"There is much complaint nowadays because discharged soldiers are not given employment immediately on their return from service. Careful study of the situation convinces me that most of these complaints come from men who have become addicts to the cigarette habit. No manufacturer wishes to employ a cigarette smoker, because his carelessness in throwing away matches and the lighted stub ends of cigarettes causes many fires. No business man wants a cigarette smoker in his office, because he permeates the atmosphere for a hundred feet with the most offensive smell that is tolerated outside the tan yard and fertilizer factory. No merchant wants a clerk who is a slave to the cigarette habit, because he drives away more customers than a dozen clean and wholesome clerks can attract. The war has left behind many scars, but the worst feature of the war is the cursed cigarette habit which has fastened itself on so many sturdy young fellows, aided and abetted by the Y. M. C. A. and kindred organizations, blackening their fingers, destroying their sense of propriety and good manners, defiling their clothes and impairing their heart action, and thus shortening their lives.

"There appears to be something in the cigarette that dulls the moral sense of the smoker. Aside from the fact that his mere presence in a dining-car or sleeper is offensive to people with sensitive nostrils, weak stomachs or discriminating judgment, his disposition to indulge in the use of the ill-smelling thing without regard to the rights and comforts of other people amounts to an offense against common decency. The cigarette smoker who lights a cigarette in a private office, public dining-room or street-car without first obtaining the consent of all who are annoyed by such an infraction on their rights violates all the rules of hospitality and decency, and immediately relegates himself to the ranks of the boor and the outcast. I have never purchased a dollar's worth of goods of a man who came into my office with a cigarette in his mouth or who made any move toward lighting a cigarette in my presence. The man who destroys the pleasure of my meal at a public eating-place by blowing cigarette smoke in my face, either voluntarily or involuntarily, never receives a favor or courtesy at my hands. I may be a crank on the subject —I hope I am—but I have heard hundreds of men express themselves equally as strongly on the subject, although some of them may be more diplomatic in describing their disgust over the ill manners and brutal selfishness of the average cigarette-smoker.

"There may have been some excuse for the use of the cigarette in the camps or the trenches, but there is no place for it in the home or any other place where decent people have a right to congregate without being subjected to annoyance and insult.

# Shall We Dispense with the Calorie?

Dr. Chapin, of New York, concludes "it is a question whether it is not time to weigh carefully the calorie theory of feeding and restrict or partially abandon its use."

The doctor's reason for this suggestion is that the calorie method of measuring food values is not a full expression of nutritive values. This, however, is no reason why the calorie should be abandoned or its use restricted. One might as well suggest that the bushel should be abandoned because there is an essential difference in the gustatory properties as well as the nutritive value of potatoes, wheat, apples, and other foodstuffs which are measured and sold by the bushel. Quality as well as quantity must be kept in mind, of course.

The calorie does not tell the whole story in relation to food values, but it tells a very essential part of it; and when properly supplemented by other facts now accessible, it gives us invaluable and indispensable information by which we are enabled to regulate the feeding of men and animals in a thoroughly scientific way. The fact that the calorie has been abused or overrated is no reason why it should be abandoned.

J. H. Kellogg

# Bran

The *Journal of the American Medical Association*, formerly inclined to ultra conservatism, is really getting pretty close to the front as an exponent of progressive medicine and diet reforms, as is clearly shown by the following excellent editorial on the subject of "Bran," which we take pleasure in quoting for the edification of GOOD HEALTH readers:

"It is strange that physicians do not make more frequent use of bran, when its laxative properties have so long been recognized in the very general use of bran mash to correct a tendency to constipation in farm animals. The evident reason for this is that bran is not a drug, and hence there is very little information regarding it to be found in the books ordinarily in the hands of medical practitioners.

"Owing to its toughness, bran, the outer covering of wheat, is exceedingly difficult to reduce to a fine powder. The trouble and expense of grinding it is so great that one of the first steps in the milling of flour is the removal of it. However, in rejecting the bran, the miller discards some of the useful constituents of wheat, as will be seen from its composition:

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|---|---|
| "Water, | 12.5 |
| Nitrogenous matter, | 16.4 |
| Fat, | 3.5 |
| Starch and sugar, | 43.6 |
| Cellulose, | 18.0 |
| Mineral matter, | 6.0 |

"The most significant constituent of bran is its cellulose, of which it contains almost twenty per cent. This cellulose is in a dense woody form, almost indigestible in the human digestive tract. As the nutritive constituents of bran are enclosed within walls of this indigestible cellulose, much of them pass through unchanged. Bran is therefore chiefly to be looked on as a form of almost indigestible carbohydrate, which is endowed with considerable laxative value, not only because it adds by its bulk to the distension of the intestine, but also because of the spicate shape of its particles. Excessive irritation does not result from these; for, when properly moistened and heated, bran becomes as soft and pliable as wet paper, and hence produces merely a gentle titillation, and is usable even in patients with a tendency to colic. Some of the cellulose undergoes fermentation, giving rise to gas and acid, both of which are laxative. It is furthermore possible that there is a chemical laxative factor present in bran itself, for W. H. Jordan, E. B. Hart and A. J. Patten, of the New York State Experimental Station, found that the laxative action of bran for cattle was lost when the soluble phosphorus compound named *phytin* had been extracted. These experiments will have to be confirmed for man.

"The dose of bran is a considerable amount: tablespoonfuls rather than teaspoonfuls; two of them rather than one; and taken several times, at least twice daily, best with meals, and indefinitely. We do not have a cure for constipation in the sense that its use can, after a while, be discontinued. It is generally necessary to employ bran as a regular ingredient of the diet; hence the importance of making the patient enjoy its use, and the desirability of making it an integral part of the meals by means of cookery. Of course, the patient may take it, as is often recommended, stirred into a glass of water after meals. Sooner or later, however, he will get tired of this uninviting potation, and soon "forget" to use it. Let the bran enter the kitchen and have the cook see to it that the patient takes enough by making it up into dishes so palatable and diversified that one will never tire of taking it. It is only when used in this way that bran really 'cures' or takes care of constipation.

"The subjoined cooking recipes might furnish some suggestions for the palatable administration of bran. There are, of course, many other ways, among which may be mentioned: graham or whole meal bread and crackers; bran with cream and sugar; bran mixed, up to one third, with breakfast cereal; bran added to vegetable purées and to fruit sauces; bran incorporated in fish cakes, minced meat, etc. Perhaps the best way to serve it is in bakery products, in which bran may replace white flour up to the extent of fifty per cent. Even pie crust may thus be made with bran.

## "BRAN RECIPES

### "Bran Potato Soup

"Mash potatoes, add water, milk or cream to make a thin cream, and then strain. To every cup of this cream add:

¼ cup bran
½ tablespoonful butter
Salt, celery salt and paprika

Bring the mixture to the boiling point, and serve.

### "Bran Mush

2 cups bran
2 cups boiling water
1 tablespoonful salt
1 cup chopped figs, or dates

"Add bran to boiling salted water and boil from three to five minutes. Cook one hour in a double boiler, adding the figs or dates ten minutes before the mush is done.

### "Bran Mashed Potatoes

2 cups hot mashed potatoes freshly prepared
½ teaspoonful salt
1 to 3 teaspoonfuls butter
⅓ to ¾ cup hot milk or cream
½ cup bran

"Add the four seasonings to the potatoes and whip mixture until light. Stir in the bran and serve.

### "Bran Griddle Cakes

1 cup bran
1 cup flour
1 tablespoonful sugar
½ tablespoonful butter or substitute
½ teaspoonful salt
1 teaspoonful baking powder
1 cup milk
1 egg

"Mix dry materials, add egg slightly beaten and milk and butter, or substitute. Beat thoroughly and bake on a hot griddle. Serve with butter and syrup. This will make twenty cakes.

### "Sweet Milk Bran Bread or Muffins

3 cups bran
3 cups white flour
2⅔ tablespoonfuls baking powder
2 teaspoonfuls salt
¼ cup sugar
2 cups milk or water
2 eggs, beaten very light
¼ cup fat, melted and cooled

"Mix the dry ingredients together thoroughly. Mix the liquid ingredients (including the fat, melted and cooled somewhat). Add the dry to the liquid ingredients, and mix only enough to blend them well. Bake in either of these forms:

"As bread: Fill a greased bread tin two-thirds full of mixture and bake it forty-five minutes in a slow oven.

"As muffins: Fill greased muffin tins two-thirds full of mixture and bake from twenty to thirty minutes in a moderate oven, 342 F. or 190 C.

### Sour Milk Bran Bread or Muffins

2 cups bran
4 cups flour
1 teaspoonful flour
2 teaspoonfuls salt
1 cup molasses (not black)
2 cups thick sour milk or buttermilk
2 teaspoonfuls fat, melted and cooled

"Directions same as in preceding recipe excepting that the baking time for bread should be one and one-fourth hours.

"This bread is almost as sweet as gingerbread. Children usually like it. When desired less sweet, reduce the molasses and increase the sour milk accordingly.

### "Yeast Bran Bread or Muffins

1½ cups milk
3 teaspoonfuls molasses (avoid black)
3 tablespoonfuls fat
1½ cakes compressed yeast (size 1⅛ by 1⅛ by ⅜ inch)
½ cup lukewarm water
2¼ cups white flour
1¾ cups graham flour
1 tablespoonful salt
2 cups bran

"Scald the milk, then cool it to blood temperature. Blend the molasses, fat and yeast with the lukewarm water to make a smooth paste. Add the molasses mixture to the lukewarm milk. Add flour to make a sponge, or thick batter. Beat the sponge from three to five minutes, cover, and put in a warm place until it is double in bulk.

"Add salt and bran, and beat dough hard from three to five minutes in a bowl, using a wooden spoon. The dough should be of the consistency of soft baking-powder biscuit dough.

"Half fill with dough a well-greased bread tin or muffin tin; then lightly rub the top of dough with fat.

"Let dough stand in a warm place until it is double in size; then bake. Do not jar the dough while putting it into the oven, else it is likely to fall. Bake one hour.

"Raisins, from one-half to one cup (soaked from one to two minutes in boiling water and then dried) or one-half cup of English walnut meats cut in slices, or both, may be added if desired.

### "Bran Biscuit

½ cup wheat bran
½ cup improved graham flour
1 teaspoonful baking powder
1 teaspoonful melted butter
1 teaspoonful salt
Milk

"Sift dry ingredients, rub in the butter, and add milk to make a soft dough. Roll it out and bake in hot oven.

### "Bran Cookies

1 cup bran
1 cup white flour
½ cup graham flour
2 tablespoonfuls butter or lard
2 teaspoonfuls baking powder
1 cup sugar
¼ cup molasses
½ cup milk
½ teaspoonful salt
1 egg

"Beat together butter and sugar, egg and milk. Add dry ingredients. Drop the mixed batter with spoon on well-greased pan. Bake about twenty-five minutes in hot oven. This makes three dozen cookies.

"Raisins may be added as follows: Wash the raisins, let them soak in warm water to cover, and then boil them in this water until they are plump. Drain, dry and chop them."

# Modern Treatment of Diabetes

Dr. Brown proceeds in an interesting article in *The Practitioner* to give us the following sketch of the treatment of diabetes in modern times, including the improved methods which have come into vogue within the last few years:

"When Rollo discovered that the limitation of the carbohydrate intake benefited the symptoms of diabetes, an important step in treatment was taken; but for many years this dominated our ideas to the exclusion of everything else. The sole aim was to formulate a diet in which carbohydrates found no part. At the best it was a negative ideal, and events proved that it was often fraught with danger. On general principles it might be expected that it would not be possible suddenly to change from a diet in which proteins and fats formed less than thirty per cent to one in which they alone entered. Yet such a change used often to be made. All carbohydrates were forbidden, while proteins and fats were allowed within limitations. When it was realized that serious symptoms and even coma might be thus produced, more gradual restriction was practiced; but the ultimate aim remained the same.

"Then came the recognition of the significance of acetonuria; it was due to incomplete oxidation of fats. In Rosenfeld's phrase, fats are consumed in the fire of the carbohydrates, and the acetone bodies have been called the smoke from the fires of metabolism. This smoke is not merely a nuisance, it is a poison. The diacetic acid, which is derived from incompletely oxidized fat, is injurious not simply because it is acid—else would adequate administration of alkalies be effective; it is poisonous even in the form of a neutral diacetate, as Hurtley and Trevan have shown.

"An attempt was, therefore, made to find some form of carbohydrate which the diabetic could assimilate—hence the so-called oatmeal cure and potato cure. I have in the past diligently sought along these lines with but limited success. Levulose can usually be tolerated in small amounts, it is true, but its expense makes it impracticable for routine use. Apart from this the chief factor in deciding the assimilation of carbohydrate is its slow absorption. The more quickly a carbohydrate enters the bloodstream, the more likely it is to overflow into the urine. The statement of this simple fact carries with it the condemnation of all processes of malting the starch for a diabetic, which is too often recommended.

"Recent advance in the dietetic treatment of diabetes has been the result of convergence between three lines of research; the influence of protein in exciting glycosuria, the value of green vegetable and egg diet, and the value of fasting. It is worth while to consider each of these in turn.

"Von Noorden maintained that meat protein was tolerated least, then casein, next cooked eggs, and finally vegetable proteins, particularly gliadin, which was borne best of all. Proteins can yield carbohydrate fractions, but probably their main influence is due to their stimulating effect on tissue metabolism.

"Allen found an additional reason for their effect in exciting glycosuria when he discovered that anything which increased the external secretion of the pancreas diminished its internal secretion. In this country, Cammidge had strongly urged limitation of protein intake if glycosuria was to be controlled.

"The diet of green vegetables and eggs was introduced by Von Noorden as part of his oatmeal cure, two days of this diet being prescribed both before and after three days of the oatmeal diet. I had followed this plan for some time when Dr. Graham pointed out to me that the benefit derived was due, not to the oatmeal days, but to the vegetable and egg days. Turning to my charts I found that this appeared to be the case. He further suggested that the vegetable and egg days produced their benefit mainly because of their comparatively low nutritive values. The recognition of an improved method of treatment was evidently near at hand.

"To Guelpa belongs the credit of introducing fasting as a treatment for diabetes, though he based it on false premises. For him, diabetes, like many other diseases, was due to an intestinal intoxication. He noted the rapid drop of glycosuria which followed fasting, but although he stated that after the fast ordinary diet should be cautiously resumed, he did not realize the importance of systematic re-education of the assimilative powers of the body.

"The credit of formulating a systematic method based on these three principles, fasting, vegetable and egg diet, with restriction of the protein intake, belongs to Allen in America and to Graham in this country. They reached their conclusions independently, almost simultaneously, and by different routes. Allen's method was the result of prolonged experimental investigation; Graham's was based on clinical observation.

"The war unfortunately prevented any full publication by Graham, so that it is improbable that he will ever receive the credit to which he is entitled; but those of us who had watched his results and followed his method, had realized how quickly the glycosuria and hyper-glycaemia could be controlled, and how at the same time the acetonuria diminished.

"The details of both methods are given subsequently. Here I may state the underlying principles. After a preliminary fast, the diet is cautiously increased step by step;

and when a certain level has been reached, the carbohydrate intake is gradually increased as well. The degree of carbohydrate tolerance can thus be quickly determined, and the diet kept well within this. Days of complete or partial alimentary rest are intercalated as required.

"Perhaps one of the most striking lessons we have learned from this is that the control of glycosuria and of acetonuria are not, as we thought, necessarily antagonistic, but can be simultaneous. While it is true that sudden restriction of the carbohydrate intake will lead to acetonuria if a liberal diet of protein and fat takes its place, it is also true that cutting down the whole of the diet practically to zero will be followed by a drop of acetonuria as well as of glycosuria. The normal individual who fasts develops some acetonuria, because he has to live on his fat, but this does not give rise to sufficient diacetic acid to produce toxic symptoms. When the diabetic takes no food, he must produce some of this fasting acetonuria, but this is more than counterbalanced by the drop in the acetonuria which had been produced by a diet poor in carbohydrate but rich in fats. Treatment is thus materially shortened, for formerly we were on the horns of a dilemma—rapid restriction of carbohydrate would produce toxic acetonuria, while failure to restrict adequately would allow the disease to progress.

"My conception of the rationale of this treatment is somewhat as follows:

"The most striking point about diabetes is that it is characterized by a wasteful metabolism. The quickest way of compelling metabolism to adopt economical lines is to cut off supplies. In proof of this, one had only to note the quick fall of nitrogenous output as soon as no food protein is taken. The old method of treatment was greatly to increase the amount of protein in the food, thus throwing fuel into the flames, for excess of protein is a great quickener of all metabolic processes. This was accompanied by excess of fat, which was incompletely oxidized with the formation of toxic products. We all had to learn during the war that we could balance our metabolism at a much lower level than we previously thought possible. And what may be but a passing phase for the normal individual, must remain a permanent state for the diabetic. He must be permanently underfed to avoid overtaxing his damaged powers of assimilation. Clearly the outlook depends upon how much these powers are damaged. If he can balance his metabolism, when the calorie food is adequate to maintain life and a fair display of energy, the outlook is good; if he cannot acquire a balance until the intake is reduced too much for this, the outlook is bad. For there must be a limit to this process of reduction.

"It follows that some loss in weight is almost inevitable under the treatment, and to a certain extent this is beneficial—the amount of food required bears a ratio to the total weight of the body. The diabetic does best when his weight is somewhat below that which he possesssed before the onset of the disease.

"I would sum up my impressions of the new treatment thus: The actual fast, mitigated as it is by tea, coffee, clear soup, and lemonade, is usually quite well tolerated, if the patient keeps at rest in bed. It is not nearly so drastic as the religious fasts of the Jews, when no fluids are taken and ordinary avocations are followed. It has been suggested that, as Jews are so liable to glycosuria, Moses ordained fasts, not because he knew anything of glycosuria, but because it was found by experience that fasting benefitted them. His knowledge of human nature told him that religious sanction was the most effective means of ensuring the adoption of hygienic measures. The days of meagre diet, particularly that of green vegetables and eggs, seem more exacting; appetite is excited, and then inadequately gratified. I often feel that my patients must rise up and call me the reverse of blessed at the end of their scanty repast. It is easier for them if they rest in bed until the total intake approaches 2,000 calories a day.

"Children seem to tolerate the treatment quite well. At first I did not like to submit them to a fast, but many diabetic children are extraordinarily good about restrictions, once their confidence has been gained. The beneficial effect of the fast is usually pronounced, and it is often easy to keep them free from glycosuria for several months. But carbohydrate tolerance steadily falls until it is impossible to stop the glycosuria. Even then, with care, it is possible to keep them in fair health and capable of enjoying life until a short time before the fatal issue, which is usually from coma.

"Even in adults we have to recognize that the new treatment does not attack the underlying cause, which is hardly surprising, in view of our ignorance of that cause. The disease may progress, therefore, though usually more slowly, under the treatment. An example of this is seen in a man at present under my care. Two years ago, at the age of 39, he had well-marked glycosuria. Treatment soon got him free from sugar, and his carbohydrate tolerance exceeded 64 grams. This amount he continued to take without any return of sugar for 18 months. Then, as sugar returned, his carbohydrates were cut down to 40. On this he kept free till three months ago. He reduced to 30 grams, and now on this diminished amount sugar has just returned. The carbohydrate tolerance is evidently falling, and more rapidly of late. He observes his diet most scrupulously, but one forsees that his struggle will end in defeat.

"The advantage of keeping the patient free from sugar is considerable; not only are his symptoms relieved, but the risk of complications is diminished. At the same time, this must not be purchased too dearly at the price of chronic starvation.

"The new method has not diminished our difficulties with regard to bread. It should be clearly understood that many forms of so-called diabetic breads are frauds, and, I fear, often intentional frauds. I distrust any preparation for which it is claimed that the starch has been so treated as to render it assimilable for diabetics. There is no proof that this is the case, and the statement lulls the patient into a sense of false security. On the other hand, real gluten breads are usually so unpalatable that the patient soon revolts. Less unpalatable forms of bread which are really free from starch, such as Callard's casoid bread or their Kalari biscuits, are rich in protein, and this must be taken into account in constructing the dietary. The best thing is to allow such a quantity of white bread as tests show can be tolerated, if this amounts to a reasonable quantity, and to educate patients to do without more than this, if possible. The principal lack they then experience is bulk of food, and an attempt should be made to supply this by green vegetables of low nutritive value, such as cabbage, lettuce, and watercress.

"It would appear, therefore, that it is much easier to free the urine from sugar for a time under the new treatment than under the old, and it is not so difficult to control acetonuria. Coma is less likely to develop. But it may be impossible to keep the urine free if the carbohydrate tolerance continues to fall. In my opinion, the best procedure is to try Graham's method, repeating it from start to finish three times, if the first or second fast does not abolish glycosuria. When the urine has been free from sugar for a few days, the diet is cautiously relaxed by the successive additions first of 5 oz. of milk and then of half an ounce of bread every other day till the sugar just returns. Then interpolate a day of vegetable and egg diet; if this abolishes glycosuria, as it probably will, return to the former diet with only 75 per cent of the carbohydrate previously tolerated. This may be regarded as the standard diet for that individual, and its carbohydrate content is easily calculated from the table given below. In order to provide some variety in the diet, I give in this table some carbohydrate values:

| | | |
|---|---|---|
| 1 oz. | of bread | 16 grams |
| 2 " | potato | 16 " |
| 2 " | green peas | 10 " |
| 3 " | artichoke | 12 " |
| 3 " | baked apple | 15 " |
| 5 " | milk | 6 " |

"Any permutations and combinations of these may be allowed, as long as the total does not exceed the limit arrived at as above. Say this is 60 grams, then, e. g., 3 ounces of bread and 3 oz. of artichoke = 60 grams of carbohydrate. It is well to give two consecutive vegetable and egg days once a fortnight, preceded by two days of the mitigated fast once a month, unless the carbohydrate tolerance exceeds 100 grams. In that case, two consecutive days once a fortnight, when the amount of carbohydrate is reduced to one-half that ordinarily allowed, will probably be sufficient. A return of sugar at any time on such a diet calls for a fast day.

"As for results, the statistics provided by Poulton from Guy's Hospital are interesting. Formerly, 16.9 per cent of the cases were fatal during the first year of the disease, but now only 4.5 per cent. Formerly, the average mortality rate was 23 per cent of all cases admitted; now it is 7.7 per cent. By the older methods only 9.8 per cent were rendered free from sugar even for a single day; now 73.5 per cent are rendered free for a longer or shorter period. His conclusion that a patient who is treated within three months of the onset has a 75 per cent chance of being kept sugar-free indefinitely is perhaps too optimistic, in view of the limited time the treatment has been in use. Even after two years' treatment, I have had the disappointing experience of watching a steady fall in carbohydrate tolerance, especially in the younger patients. However, it must be admitted that the method has introduced an element of hope into the treatment of diabetes, an element which hitherto has been sadly lacking."

# The Ripening of an Apple

In Mexico, ripe fruit is said to have been cooked in the sun (*cocido in el Sol*). The Arabs have a similar saying. The changes which take place in the cooking of green fruit are much the same as those which occur during ripening, though much less extensive. Cooking renders green fruit digestible, and ripening does the same, but also involves many other changes. The Experiment Station Record tells us that "the apple fruit, considered as a living organism, has first a period of growth during which the dry matter, principally starch, is continually increased. A second, or ripening, period follows, during which starch is changed into sucrose (cane sugar). This in turn is gradually changed into invert sugar, with a gradual decrease of malic acid and of carbohydrates and an accompanying respiration of carbon dioxid. These changes are largely due to the activity of oxidizing enzyms, the oxygen of the air being drawn upon in the process.

"The changes progress much more rapidly after picking, at high temperatures, and in the short-season varieties. Soon after picking, apples should be placed in cool storage to retard the processes above mentioned. Respiration continues during the storage period, becoming ultimately less active. Transpiration continues during the life of the apple. The third period is that of disintegration."

# Syphilis as a Non-Venereal Disease

The great barrier in the progress of the dissemination of knowledge in syphilis has been the erroneous idea among some physicians and the public at large that syphilis is always a venereal disease, and only contracted through vice and vicious habits.

Those versed in the clinical knowledge of syphilis know the fallacy of this assumption, and have fought valiantly to throw the clean light of public opinion upon this great menace to public health.

The social barrier placed around the discussion of this disease through the custom of centuries has prevented the world from knowing its true position in relation to the well-being of the race. The effects of no disease are so insidious and far-reaching as those of syphilis, because it is the only one in which the parasite causing it is handed down from parent to offspring. This one fact places it as the greatest menace.

Syphilis does not spare the throne, the cloister, nor the brothel. It attacks all classes and all ages of man. Probably 15 per cent of the population of any given civilized country is infected with this disease in times of peace; but this percentage jumps up tremendously in times of war, when crowds of people are moving promiscuously from place to place. All infectious diseases increase during such periods.

All cases of paresis and locomotor ataxia are due to syphilis. Therefore 30 to 40 per cent of those who are confined in our State hospitals are there through the destructive influence of syphilis.

Sixty per cent of diseases of the heart are due to syphilis, as is also a certain per cent of cases of total blindness. Various other pathological conditions which incapacitate or totally destroy a large per cent of the human race are claimed by this disease.

It is a most appalling fact when one considers that nearly one-quarter of the cases of acquired syphilis are contracted innocently. The statistics at the Barnard Free Skin and Cancer Hospital in St. Louis show that 24.5 per cent of those appearing at the clinic of that hospital with the initial lesion of syphilis (the chancre) as their chief complaint had the chancre situated extragenitally and had contracted it innocently. In Sweden, where the disease was recently made a reportable one, the percentage of innocent extragenital infections is 23 per cent.

We mean by "innocently" that these infections were not transmitted through vicious habits.

Probably the greatest propagator of syphilis is the ignorant girl who lives at home and prostitutes her body through pure waywardness and not with the desire for direct monetary gain. This prostitution is stimulated in these girls by the love of dress, finery, and a so-called "good-time." The girls are not within the law, as they are not public prostitutes, and education is the only medium for circumventing infections acquired in this manner.

The medical profession know certain prophylactic means by which the prevention of infection may be secured. These means were widely used by the Government in the army and navy.

Good Health heartily agrees with the above from the *St. Louis Health Bulletin*, but has no hope that any other preventive than good morals and rigid quarantine of all infected persons will accomplish anything toward the control of this awful plague.

# Food Is Fuel

Food is fuel. The body must produce heat to maintain its temperature, which remains constant at about 100° F. in the interior or a little less at the exterior, and also to do work. Food is burned in the body just as coal is burned in a locomotive. The amount of food required depends upon the amount of energy expended by the body. This energy is measured in calories. In a recent book, entitled "Food in War Time," Dr. Graham Lusk tells us that "'A calorie is the measure of a unit of heat, or the quantity of heat necessary to raise a liter of water from 0° to 1° Centigrade. Apparatus has been invented for measuring the heat production of a man, an apparatus which is called calorimeter or a measure of calories. If one puts a man weighing, say, 156 pounds in a box of such an apparatus, so that he lies comfortably on a bed in complete muscular relaxation, and before his breakfast, one finds that he produces seventy calories an hour. Only in certain types of disease is there any variation from this normal, though of course the weight of a man makes a difference in his requirement for energy.

"'If, at the same time the subject is in the box, the quantity of oxygen which he absorbs is measured, and if certain other chemical analysis be carried out, one can calculate the exact amount of protein, fat and sugar which have been oxidized by this oxygen. Now, if one calculates how much heat ought to have been set free from the oxidation of these quantities of protein, fat, and carbohydrate, it is discovered that the heat which ought to have been produced is exactly that quantity which was measured as having been produced by the man. This measurement represents the basal metabolism of a man at complete rest, when his oxidative activities are at their lowest ebb.

"'The basal metabolism as measured by seventy calories per hour in the case of this individual represents the sum of the fuel needed—(1) to maintain the beating of the heart, which every minute of a man's life moves the blood or one-twentieth part of the weight of the body, in a circle through the blood vessels.; (2) to maintain the muscles of respiration that the blood may be purified in the lungs; (3) to maintain the body temperature at that constant level which is so characteristic that a slight variation signified illness; and (4) to maintain in the living state the numerous tissues of the body.

"'Any extraneous muscular movements are carried out in virtue of an increased oxidation of materials, and the heat production rises above the level of the basal metabolism with increased muscular effort. For a long time the power for the maintenance of the human machine can be furnished by its own body fat, as is seen in cases of prolonged fasting, but usually the power is derived instead from the food fuel which is taken.

"'It has been established as a certainty within a plus or minus error of only ten per cent that the basal metabolism of a man between twenty and fifty years of age is forty calories per square metre of body surface. For boys of twelve it is fifty calories, and for boys of fifteen forty-four calories per square metre of the body surface. This explains the large appetites of boys.

"'Women show a metabolism which is seven per cent lower than that of men, or thirty-seven calories per hour per square metre of surface.

“‘The basal metabolism of an average boy of thirteen years of age weighing eighty pounds and of a height of four feet ten inches may be calculated as 1,525 calories per day. This is the same as that of a man twenty-five years old, weighing 126 pounds and five feet three inches tall.

“‘A boy thirteen years old and weighing 156 pounds, his height being six feet one inch (there are such cases), would have a basal metabolism of 2,300 calories, or larger than that of any grown man given in the table—larger than a man weighing 211 pounds and six feet four inches in height. I personally know a boy of this age and size. His parents are said to have sent him to a boarding school in order to reduce their food bills.

“‘It is evident from this discussion that the food requirement of boys over twelve years old is about the same as that of men.’”

Dr. Benedict has shown that the percentage of increase of the energy output of the body in different positions is as follows:

| | |
|---|---|
| “Sitting | 5 |
| Standing, relaxed | 10 |
| Standing, hand on a staff | 11 |
| Standing, leaning on support | 3 |
| Standing, ‘attention’ | 14” |

Bodily activity requires an increase of the rate of expenditure in proportion to the amount of muscular effort made. Walking at the rate of three miles an hour, the energy expenditure per pound of body weight is increased one and one-tenth calories per hour. In walking at the rate of five and three tenths miles an hour the increase per pound is three and six tenths calories. In running at the rate of five and three tenths miles an hour an increase of three and one tenths calories per pound of body weight is required.

Dr. Lusk calculates that persons engaged in various occupations, require the amount of food estimated in calories shown in the following table, no allowance being made, however, for the energy expended in walking or other exercise aside from that involved in the several employments named.

| “Occupation | Calories of metabolism per day |
|---|---|
| Bookbinder | 2,440 |
| Shoemaker | 2,510 |
| Carpenter | 3,100 |
| Metal worker | 2,900 |
| Stonemason | 4,200 |
| Man sawing wood | 4,800” |

Dr. Lusk tells us that a well-balanced diet may be made up of corn, greenstuff and olive oil, a combination which contains “everything necessary to human health and strength and even including the essential vitamins.” Dr. Lusk insists that flesh-eating “‘is a question of habit, but with the present reduced supply of meat one must adopt new habits. It would be highly desirable if the grain now fed to fatten beef were given to maintain herds of milch cows’” and adds the following highly important suggestions:

“‘Whole milk contains everything necessary for growth and maintenance, protein, fat, milk-sugar, salts, and the unknown but valuable accessory substances. It is of such prime importance that each family should have this admirable food that I have suggested that no family of five should ever buy meat until they have bought three quarts of milk. The insistence by scientific men upon the prime importance of milk has probably had something to do with its rapid enhancement in price. The latter factor is greatly to be regretted.

“‘Splendid health, both of body and mind, the peasants’ comparative immunity to indigestion, kidney and liver disease, as well as an absolute immunity to gout, is the alluring prospect held out by the following dietary:

| | |
|---|---|
| “‘Graham bread | 1 pound |
| Potatoes | 2 pounds |
| Vegetable fat | ½ pound |
| Apples | 1½ pounds |
| Milk | 1 pint |

“‘This bread-potato-fruit diet gives a

very excellent basis of wholesome nutrition. The potatoes yield an alkaline ash which has a highly solvent power over uric acid, and therefore, a good supply of these valuable tubers is needed by every nation.' "

# Water for Famished Jerusalem

Not since the days of the Roman Empire has running water been as plentiful in Jerusalem as after General Allenby's occupation of the city with his British troops. An American Red Cross engineer attached to the victorious army has written an interesting account of the engineering measures necessary to provide adequate water not only for the troops but for the population of the Holy City itself.

Rain water, stored in cisterns, aqueduct-borne water from Solomon's Pools amounting to 40,000 gallons per day, and the Pool of Siloam, virtually liquid sewage, constituted the sources of supply when the British entered the city. The rainless summer soon would be upon the city, and immediate steps for increasing the water supply were necessary. So the British modified the ancient Herod-Pontius Pilate system.

The ancient engineers of the Roman world had carried the water of the Wadi Arrub springs in rock-cut channels to a reservoir of 4,000,000 gallons capacity, and thence to Jerusalem by a masonry aqueduct via the Pools of Solomon. These rock-cut channels were thoroughly cleansed, for literally the "dust of ages" blocked them. Large quantities of dirt, including the bodies of individuals and animals who might have lived in almost any period, were taken from them.

The ancient reservoir was then repaired and pumps were installed, pumping water to a newly erected reservoir of 300,000 gallons capacity at a point near the springs, whence water flowed by the force of gravity to a reservoir constructed on a high point west of Jerusalem, so that it was possible for water pipes to carry a supply to any point in the town itself. These installations, erected as a military necessity, will be of permanent value to the city.

The work was begun April 15, 1918, and nine weeks later water was delivered to the inhabitants. Twelve miles of pipe line were laid to insure this result. The daily supply was 280,000 gallons; and during the early summer, when the supply was plentiful, storage cisterns were filled in Jerusalem for the larger buildings.

Jerusalem contains rain water storage cisterns to the capacity of 360,000,000 gallons—a supply barely sufficient for the needs of Greater London for thirty-six hours.

# Peanuts and Soy Beans

We quote the following from the Editorial Department of the *Journal of the American Medical Association,* Oct. 26, 1918:

"The evolution of food products from animal sources—the production of meat, milk, eggs, pork, bacon, poultry, etc.—involves the conversion of plant products, many of which may serve directly as human nutriment. This transformation of cereals, for example, into meat and milk, is an expensive one from the standpoint of the energy exchange that is necessitated. To build up one pound of food in the form of animal tissues calls for the feeding of many pounds of nutrients from plant sources. It has therefore become a serious problem in the face of a possible shortage to determine to what extent it is permissible, not to say profitable, to convert edible cereals into animal products prior to using them, rather than to consume the corn, barley, wheat, etc., directly in the human ration. Milk must be had at all events; but it seems probable that both Americans and Europeans will tend more and more in the next few years to displace meat and related animal food materials to a considerable degree with vegetable foods. The trend toward a more extensively vegetarian regimen is almost certain to follow as a consequence of the altered conditions of animal husbandry enforced by the high cost of feeds.

"The prospect thus presented brings the cereals into prominence at once. Among a large group of population in France, bread constitutes more than half of the energy intake per day. The cereals are essentially alike in being comparatively low in their content of protein as contrasted with animal foods. Any plan to supplant the latter to any extent in the dietary therefore calls for the introduction of products from vegetable sources that can be classed as protein-rich. These must be available to supplement in some degree the already indispensable cereals, just as meats and other animal foods do at present.

"The protein problem is not, however, merely a quantitative one. There is considerable justification for the belief that the proteins supplied by meat, eggs and milk are of high biologic value. In replacing them as the status of the pocketbook and the economics of agriculture seem to demand, attention must be centered on the possibility of securing proteins that represent a suitable amino-acid make-up, the nutritive significance of which has repeatedly been pointed out in *The Journal.* The legumes, particularly the ordinary garden peas and beans, come foremost into mind as protein-rich vegetable food materials. But there is no lack of evidence to show that while the proteins of the more widely used legumes are quite well utilized by the human body, comparing very favorably in this respect with the cereal proteins, they are not as completely utilized as the proteins supplied by such animal foods as meats, eggs and milk.

"Two leguminous seeds have lately made better claims for more popular recognition in human nutrition. The soy bean has been a staple for generations among the people of China and Japan. It forms a prominent source of protein in their diet, supplementing rice, which is so extensively used and contains a great excess of carbohydrates. These people keep few livestock and eat little meat. Apparently they believe it is the part of economy to eat vegetables rather than to feed them to animals and then eat the animals. In this country a beginning in the use of soy beans in the human dietary has scarcely yet been made. The second legume, the peanut, is popularly known, though its prominence dates back to scarcely more than half a century. It is eaten in a casual way, rather than as a staple in the diet; and it would not be difficult to gather impressions' as to the poor digestibility of the peanut.

"We have already presented some reasons for believing that both the soy bean and the peanut may represent unusually desirable sources of protein. In reporting the feeding experiments of Osborne and Mendel and Daniels and collaborators, the favorable prospect offered by an increased use of both products was intimated. Further studies conducted by Johns and his coworkers at the Bureau of Chemistry in Washington show that from both soy beans and peanuts it is possible to isolate a liberal quantity of proteins relatively rich in their yield of the amino-acids lysin and tryptophan—a partial index of presumable nutritive superiority.

"An added test of dietary value—that of digestibility—has been furnished anew by the Office of Home Economics in the United States Department of Agriculture.

"The figures obtained for the digestibility of the proteins supplied by soy bean and peanut press-cake flours compare favorably with those obtained for cereal proteins, and are somewhat higher than those obtained for some other legume proteins. Perhaps, therefore, we shall not go amiss for the present in classing dietary articles suitably prepared from either the soy bean or the peanut as substitutes for both wheat and meat. The success of such substitution, however, becomes a problem of the culinary art rather than of physiology."

# Ten Old Arguments for Flesh-Eating Answered by Modern Science

1. Meat was once supposed to be necessary for blood-making, but it is now known that such inexpensive foodstuffs as greens and fresh vegetables not only contain more iron than does the finest beefsteak, but better food iron than is found in meats of any sort. Dr. Sherman, of Columbia University, in his work on "The Chemistry of Foods," calls attention to the fact that the iron of meat is not superior but rather inferior to the iron found in vegetables, so meat can no longer be held on scientific grounds to be a specially valuable food for persons suffering with anemia. Persons who need an increase of blood corpuscles, and hence require an extra supply of iron, should eat greens instead of meats. Spinach, lettuce, beet tops, turnip tops, greens of all kinds, should be used plentifully. Anemic persons may not only discard meats with safety but with great benefit, for certain germs found in meat and the germs which are encouraged to grow by the presence of undigested meat residues in the colon, are a well-known cause of anemia because of the fact that the poisons which they produce destroy the red blood cells. A non-flesh diet prevents the development of these germs in the colon, and hence is in the highest degree favorable to enrichment of the blood through the absorption of the rich supplies of food iron found in many vegetable foods.

2. Beef-tea was formerly supposed to be a highly valuable stimulant and almost essential for feeble patients. It is now known that the opposite of this is true. Beef-tea is, according to an eminent French physician, "a veritable solution of poisons." The late Dr. Austin Flint, of Bellevue Hospital College, one of the most eminent physicians America has ever produced, had a chemical analysis made of beef tea, and found the result to be practically the same as the analysis of urine. It was inevitable that this should be the case, for the reason that beef tea, animal broths of all sorts, bouillon, and meat extracts are all extracts of the tissues, artificially prepared, whereas the urine is also an extract of the tissues produced by the vital processes active within the animal body. Beef tea is now known to be a poison and an intoxicant and in no proper sense a stimulant. It has no sustaining power, and hence its use is not indicated for fever patients nor as a means of building up feeble or convalescent patients. Dr. Flint asserted that thousands of fever patients have been starved to death on beef tea. Instead of nourishing the body, it burdens it with poisons which the liver and kidneys must eliminate.

3. Tuberculosis.

It was formerly supposed that meats of all sorts were especially valuable in the treatment of tuberculosis. Many years ago a German enthusiast opened an institution for the purpose of feeding consumptives exclusively on a meat diet, using chiefly raw meat. It is scarcely necessary to add that the enterprise failed completely within six months.

Meats increase the work of the kidneys in two ways; first, by introducing poisonous substances into the body; second, by encouraging the production of body poisons through the putrefaction of the undigested food residues in the colon. A patient suffering from tuberculosis or consumption rarely dies of this disease. Even in the most advanced stages there is still left sufficient lung capacity to carry on the function of respiration. The consumptive does not die from lack of lung capacity but from chronic poisoning. After-death examinations made in hundreds of cases at the Phipps Institute of Philadelphia, showed that eighty-six per cent of all persons suffering from tuberculosis of the lungs have advanced disease of the kidneys. Failure of the kidneys is, in fact, among the most common causes of death in lung tuberculosis. It is the almost universal custom of physicians to advise the patient suffering from Bright's disease to avoid butcher's meat.

From the foregoing it must be clear that the consumptive who wishes to attain the greatest possible success in combating this disease should avoid the use of meats as one of the most effective measures for protecting his kidneys, which always have an excess of work in this disease because of the great quantity of poisons thrown into the circulation by the tubercle germ.

Meat is no longer prescribed for tuberculous patients in great quantities, as formerly. The late Dr. Sternberg stated in a letter to the writer a few years before his death, that he had satisfied himself by clinical observation that patients suffering from tuberculosis did not require an excess of meat, as had previously been maintained, but the very reverse.

4. For more than a century, and until very recent times, it was maintained by many physicians that a diet consisting almost exclusively of flesh foods was specifically indicated in diabetes. Up to within a comparatively short time it has been the custom, indeed, to feed diabetics almost exclusively on a meat diet. It is now known, however, that a meat diet does not cure diabetes but actually aggravates the disease, increasing the loss of sugar in the urine and in various ways aggravating the disease instead of antagonizing it.

5. A lean meat diet was long regarded almost essential in the treatment of obesity, as in the treatment of diabetes. It is now well-known that in cases of obesity there is a decided tendency to the development of diabetes, which is encouraged by meat feeding. A proper diet in obesity is a bulky diet rich in cellulose, consisting largely of fruits, fresh vegetables and greens, which combat the bad effects of restricted nutrition by supplying an extra amount of lime, salts and food iron.

6. The idea advanced some years ago that meat is necessary for the cure of beriberi, or that it is the best remedy for this disease, has been well shown to be erroneous. It is now known that a meat diet is a deficiency diet. Ordinary meat is greatly lacking in vitamins. The fat soluble vitamin is almost wholly absent in meat, and the water soluble vitamins, which are especially concerned in beriberi, are present only in moderate amount.

In the animal body, the vitamins are collected in the liver, kidneys, and other glands, chiefly those which are concerned in the formation of hormones; and hence, instead of a meat diet being a cure for beriberi, it may be the cause of grave nutritive failure, unless in addition to ordinary meat, liver and kidneys are freely fed. Indeed, if one is to subsist largely upon flesh food, he can only avoid ultimate disaster by taking care to eat the whole animal—liver, kidneys and other viscera, to avoid suffering the consequences of a deficiency of vitamins. What has been said of beriberi is equally true with reference to scurvy and pellagra. A diet of cooked meats quickly produces symptoms of scurvy.

7. The idea that meat is a "building-up food is exploded." A widespread cause of nutritive failure is due to a lack of lime in the food. Flesh food of all kinds are greatly deficient in lime. The lime of an animal's body is found in the bones, not in the soft parts. Only one two-hundredth part of the lime is found elsewhere than in its bones. The protein of vegetables is closely associated with lime; so that when one gets his protein from vegetable sources, he will always get a sufficient amount of lime, since the lime goes with the protein. But if meat is the only source of lime there will soon be a great deficit, for the reason that lean meat contains scarcely half a grain of lime to the pound; and since fifteen and one-half grains of lime are needed to satisfy the daily needs of the body, one getting his lime from this source would have to eat not less than 30 pounds of meat per diem, a feat which could not be accomplished even by the most colossal meat feeders.

8. Another popular error is that meat is the muscle-building food par excellence. For centuries it has been the fashion to train athletes and pugilists upon a very heavy meat diet. Nothing could be more absurd. Our modern trainers seem to have forgotten that the gladiators of ancient times were trained upon a diet of wheat cakes and simple vegetables. Milo, the Greek, perhaps the strongest man who ever lived, was a disciple of Pythagoras and was a strict vegetarian. It is well-known that athletes often go "stale" after having been under training for a few weeks. This is generally supposed to be due to over-exercise. This, again, is an error, the real cause being the saturation of the body with uric acid and other poisons derived from the meat and from the putrefaction of undigested residues of meat in the colon.

9. Woods Hutchinson and others have advocated very strongly the free feeding of meat to growing children. This recommendation has been based, not on scientific grounds or on clinical observation, but purely on the fancy that red meat is the best possible source for the muscular tissue which the growing child *needs* to form about one-half the weight of his body. Modern physiologists tell us that meat is not at all necessary for muscle building; and that it is an inferior source for the protein needed for body building. The protein of milk, of the soy bean, and of nuts in general, is known to be superior to meat as a source of body nitrogen, but it has also been shown that carbohydrates, starch and sugar are equally as necessary as protein for the tissue building of a growing child; and analyses of mother's milk made by Rubner and others have shown that the nursing child requires daily only one calorie per pound of its body weight, this notwithstanding the fact that 40 per cent of all the protein it takes is required for tissue building. This proportion of protein is so small that it is easily derivable from the various foodstuffs provided by a mixed diet, particularly if not less than a pint of milk is taken each day, milk being an article of food which is especially adapted to the needs of a growing animal. A young child should have a quart of milk daily.

10. Persons accustomed to a hearty meat diet are often frightened at the mere suggestion of discarding meats, because they have so long been dependent upon the strong flavors of meats as a stimulus to appetite. Though it has been proven that these flavors are not needful for digestion and are of questionable service in any other particular, it is now possible to secure the appetizing flavors provided by meat from the vegetable kingdom. Extracts are now prepared which give the flavor and even the appearance of the best meat extracts, but are wholly free from the uric acid and other deleterious substances found in meat ex-

tracts. It has been shown that the strong meat flavors and an excess of protein accompanying a meat diet are a very prolific source of gastric disorders of various sorts, particularly hyperacidity, gastric catarrh, and gastric and duodenal ulcer. An eminent stomach specialist some years ago stated in a discussion of the subject of gastric ulcer by the Surgical Section of the American Medical Association that "ulcer of the stomach is a meat-eater's disorder." There are also many who believe that the great increase of cancer of the stomach in recent times is due to the consumption of meat. The fact that cancer of the stomach occurs more frequently in men than in women would seem to corroborate this idea, since it is well-known that men are as a rule much larger consumers of meat than are women.

# Exterminate the Rat

It has long been known that the rat is a carrier of the plague germ, and now it has been found that it carries certain parasitic protozoa which may cause fatal illness. The London *Lancet* says:

"The rat is becoming ever more and more a suspect. In regard to protozoal parasites it has long been known to harbor the *Trypanosoma lewisi,* an apparently harmless guest. The Japanese have shown the rat to be the host of two other protozoa which, while harmless to itself, are capable of causing serious illness in man. These are the *Spirochaeta icterohaemorrhagiae* Inada and the *Sp. morsus muris* Futaki. The work of Inada, Ido, Hoki, Kaneko, and Ito, on the first-named, has since been confirmed by the demonstration of rat carriers in France, Belgium, Algeria, and the United States of America. In England the presence of the specific spirochaete of haemorrhagic jaundice in the rat was not fully proved until the investigation of Major A. G. R. Foulerton, carried out in the Hygiene Department of University College, London, and recently printed at the instance of the Public Health Department of the Corporation of London. Major Foulerton examined 101 rats caught within the City and Metropolitan area, and found in four of them a spirochaete which killed a guinea-pig on the twelfth day, with all the characteristic appearances of spirochaetal jaundice. Three of these rats were from a batch of twelve caught at a general store in the city last November; the fourth from a batch of seven from another part of London. Dr. A. C. Coles stated in our columns last year that he had found spirochaetes resembling the *Sp. icterohaemorrhagiae* in 9 out of 100 rats caught in the neighborhood of Bournemouth, and gave excellent micho-photographs of the protozoa, but he did not proceed to confirm his results by animal inoculation. Major Foulerton discusses the method of transmission of the protozoon from rat to rat and rat to man, including the first case to accidental inoculation, in the latter to the infection of food and drinking water. For the present the rat-flea has nothing to say in this matter.

"In a presidential address, delivered last year before the Royal Society of New South Wales and since reprinted and circulated, Dr. J. Burton Cleland pointed out that a town that lets its rats multiply is exposed to a menace that may lead to enormous financial losses and possibly a heavy death roll. Rats live a communal life in direct contact with each other, and thus the passage of any pathogenic organism is facilitated, while in the passage the pathogenicity of the less lethal forms is probably increased. He went on to discuss rat leprosy, which is widely distributed, though of relatively rare occurrence, its incidence among the rat population in New South Wales being about the same as the incidence of leprosy amongst the human population."

# Department of Eugenics

Conducted by Reynold A. Spaeth, Ph. D.
Associate in Physiological Hygiene, School of Hygiene and Public Health,
Johns Hopkins University

# Eugenic Aspects of the International Labor Conference

In the midst of politics, national and international, and attempts to ignore or wind up the various European wars that still disturb a world theoretically at peace, the findings of the First International Labor Conference have had little publicity or appreciation. We heard something of the squabbles about which delegates were to be seated, and any row that made a good newspaper story was promptly reported—but just what did the Conference accomplish? From the point of view of the hope for race betterment, all the six conventions and the numerous recommendations adopted by the Conference are significant. They represent to a large extent what the civilized world is ready to do to improve the condition of a tremendous proportion of its population—the laboring classes. An attempt was made to consider working men, women and children, not as voters, organized or unorganized "labor," or political opinion, but as "just people."

## Protection of Children

The first convention of the Conference provides that children under fourteen shall not be admitted to industry. In Japan, however, the limit is set at twelve years for children who have finished their elementary education. Special arrangements are to be made for children now employed between the ages of twelve and fourteen; and the present law admitting children over nine to certain work is to be repealed. In the case of India the convention provides only that children under twelve shall not be employed in certain factories, mines and transport duties. The British Empire appears in this particular instance regrettably less progressive than the Japanese.

## Protection of Women

Two conventions aim at the protection of women in industry. One prohibits night work between 10:00 P. M. and 5:00 A. M., except in the case of certain industries where deterioration or loss of materials must be avoided. The second permits women to leave work six weeks before childbirth and requires absence for six weeks afterward. In both cases, women are to be guaranteed against discharge, and are to receive either State or other aid sufficient to maintain both mother and child during the periods of absence. This provision answers, at least in theory, a most complex and difficult problem—that of the working mother.

## Machinery for Carrying Out Recommendations

In order to be effective, the Conference realized that some sort of practical machinery had to be devised for carrying out its conventions and recommendations. To this end the Conference established an International Labor Office "to collect and distribute information on world labor problems; publish a periodical in English and French; prepare the agenda for the annual conferences; see that conventions agreed to are carried out, and in general to keep in touch with governments, employers and workers in order to facilitate the peaceful and progressive improvement in industrial life as directed in the Peace Treaty." (The New Republic, December 24, 1919.)

The need for longer recreation and personal development hours was recognized by the Conference in adopting—after an intense and spirited struggle—the eight-hour day and the forty-eight hour week. "The rigid French eight-hour day principle was harmonized with the British Saturday half-holiday practice by a balance whereby if less than eight hours is worked on any one day, the time lost may be distributed over other days to a total working time of not over nine hours a day. . . . The principle of the weekly rest day is recognized for the first time."

## Adolescents

The most important eugenic aspects of the work of the Conference lie in the emphasis placed upon protecting adolescents in industry. Babies and mothers can always be relied upon to appeal to popular sympathy, and measures for their care are universally conceded to be necessary. But the twelve to twenty year group has been distinctly neglected, especially in America. During the war the barriers against child labor were let down to a degree not realized by the public. Great numbers of children were engaged in factory work. In the seventh annual report of the Chief of the Children's Bureau of the U. S. Department of Labor we are told that "a mistaken sense of patriotism and the many opportunities for employment at an abnormally high wage combined to draw permanently into industry large numbers of boys and girls, many of whom under normal conditions would have continued in school for several years."

We may remind our readers that the Federal Child Labor Law which went into effect temporarily on September 1st, 1917, prohibited the employment of children under sixteen in mines and quarries, and of children under fourteen in factories; limited the working day to 8 hours for children under 16 employed in factories, and forbade their working between the hours of 6 P. M. and 7 A. M. But this law was unfortunately declared unconstitutional by the Supreme Court on June 3, 1918. The immediate effect of the decision of the Supreme Court was the prompt restoration of the longer working day for adolescents under 16 years of age in States where the State child labor standards were lower than those the Federal Statute sought to impose. At the same time there was an increase in the number of working children. The inspector of the Children's Bureau found an increase also in the violations of State child labor laws. For example, in one State where the minimum age for employment in canneries was 14 years, 721 children under that age, including *50 who were not yet 10 years old,* were found working in canneries in the summer of 1918.

Recognizing the seriousness of this increased employment of young children, the War Labor Policies Board voted that all firms engaged on Government contracts made after the decision of the Supreme Court on Federal child labor law, must comply with the standards of that law. A special investigation of illegal employment of children in shipbuilding plants was made by the Bureau, in co-operation with the Emergency Fleet Corporation, in the winter and early spring of 1919. Many violations of State and Federal laws were found in the important shipbuilding plants on the Atlantic coast, the Gulf of Mexico and the Great Lakes. But even more serious was the employment of children in hazardous occupations which, before the war, had been confined to older boys and men.

The need for enlightened public opinion to assist Federal and State officials in enforcing laws concerning the employment of children and adolescents is very great indeed. The International Labor Conference has shown by the nature of its recommendations—although they are frequently criticized as being too moderate—that the general attitude of all civilized communities is in favor of protecting this important portion of the population. Conventions, recommendations, even legislation, are not enough by themselves to put through important reforms. It is "up to" every forward-looking member of society to add his voice, and where necessary his active assistance, in seeing that these elementary safeguards to the future of the race are put into force.

# An Ancient Theory of Sex-Determination Exploded

"The problem of the causation of sex in mankind has always been a fascinating one, and only recently it has been described as 'on the borderland of the insoluble.'" This sentence, from the preface of the first edition of E. Rumley Dawson's book, "The Causation of Sex in Man" (London), would seem to indicate that the author is about to approach this subject in slightly mystic fashion. Actually, he resurrects the ancient theory that "the supplying ovary is in reality the essential factor in the causation of sex"—a theory time-honored, it is true, but out of keeping with modern advances in biological and medical science. The medical profession, however, is not always as impressed as it might be by purely biological experimental work. In commenting on and criticizing Dawson's theory, Dr. J. G. Murray, in the Johns Hopkins Bulletin for December, 1918, makes it very clear that on clinical evidence alone the theory that the sex of a foetus is determined by the ovum's coming from the right or the left ovary is untenable.

In our discussion of sex-determination a few months ago, we tried to show the reasons for assuming that in man, as well as in certain other mammals, the ova are probably all neuter—whereas the sperms are of two sorts, male-determining and female-determining. If this is true, the sexual fate of the foetus is determined in man when a male or a female-determining sperm happens to unite with a particular ovum. Whatever responsibility the ova have in the matter would then be as selective agents; under certain conditions or for some obscure, possibly chemical, reason a certain ovum might have a greater affinity for either the male or the female type of sperm.

Dawson, however, contends that the ova alone determine the sex of the child, the spermatozoa having no influence at all, and that the basis of the difference in the ova is to be found in some mysterious, ultramicroscopic or chemical property in the ovaries. His theory is very similar to those advanced by Hencke in 1786 and by Millot in 1816. Briefly, it is that male babies result from the fertilization of ova from the right ovary and female babies from the fertilization of ova from the left ovary. Dawson also believes that the ovaries normally and ordinarily release ova ("ovulate") alternately and at an interval that can be determined. From these two premises he arrives easily at the pleasing conclusion that rules may be deduced for "forecasting or predicting the sex of the unborn child and on the determination or production of either sex at will."

## Dr. Murray's Clinical Evidence

Without going exhaustively into Dr. Murray's criticism of this theory of sex-determination, we can touch upon the most important and interesting clinical evidence brought forward by him. In order to verify or disprove such a theory as Dawson's it would be necessary to show in every case whether the ovum which formed a male foetus came from the mother's right ovary, and the ovum that formed a female child came from the left side. This sort of evidence obviously can be collected only through hospital data, either where pregnancy follows upon the removal of one ovary or where post-mortem examination of the ovaries is made during or shortly after pregnancy. When an ovum is fertilized, it attaches to the wall of the uterus; and immediately upon this attachment a small spot known as the corpus luteum ("yellow body") appears on the surface of the ovary in which the now fertilized ovum originated. These yellowish spots remain permanently upon the surface of the ovaries, so that it is possible by counting them to determine how many pregnancies a woman has had. Their appearance, however, changes somewhat with time, and it is by no means difficult to tell which is the latest corpus luteum, and thus in which ovary the ovum involved in the most recent pregnancy originated. Dr. Murray says:

"At the suggestion of Dr. Williams, the records of some 17,500 deliveries occurring in the Obstetrical Clinic of the Johns Hopkins Hospital from September, 1896, to March, 1918, were searched for suitable cases by which the principal theory advanced by Dawson could be tested. All those cases in which the location of the corpus luteum was actually demonstrated at Caesarian section, at laparotomy (i. e. abdominal operation) for therapeutic abortion, at laparotomy within two weeks after delivery, or at post-mortem examination, and in which there was no question as to the sex of the child, were tabulated. While observations made at Caesarian sections had frequently shown that male children were not always derived from the right ovary, and that female children were not always derived from the left ovary, the results obtained were rather surprising.

"In all, 75 suitable observations were made on 70 women, five women each having two pregnancies. It is remarkable that the corpus luteum was found to be in the right ovary in 38 of the cases, and in the left ovary in 37 of the cases; an equal division."

An analysis of the results tabulated by Dr. Murray shows that Dawson's theory is untenable in the face of the clinical facts. The location of the "yellow bodies" (corpora lutea) on the surface of the ovaries examined shows conclusively that the ova came almost in exactly equal numbers from the two sides. Of the ova from the right ovary, 38 cases in all, 26 resulted in male children, while 12 were female. Of the ova from the left ovary, 37 cases in all, 21 resulted in male children and 16 in female children. If Dawson's theory were correct, all the 38 cases where the corpus luteum was found on the right ovary should have been boys and all the 37 cases where the yellow body appeared on the left side should have been girls. When the 75 cases were analysed further from the point of view of sex, the results are even more strikingly against Dawson's theory. Out of the 75 children, 47 were males and 28 females. And more than half the males (26 instances or 55%) were found to have originated in the *left* ovary; while the female children came in almost equally chance proportions from the two sides—12 or 43% from the right, and 16 or 57% from the left ovary. Dr. Murray's wholly justifiable conclusion from this test of Dawson's theory is as follows:

"From these figures it is evident that Dawson's theory cannot be correct; and, considering that the majority of the children in this series of cases are male, it is also clear that babies of either sex result in about equal numbers from the fertilization of an ovum from either ovary. Furthermore, one is led to say that clinical evidence shows that the determination of sex is probably not due to any factor present in the unfertilized ovum."

Dr. Murray also goes into Dawson's attempt to lay down rules for the determination of the sex of a child. He finds that, as these rules depend largely upon the belief in the responsibility of the supplying ovary for the sex of the foetus and partially on the unproven theory that the ovaries ovulate (give off ova) alternately, the "rules" are entirely unreliable. Dr. Murray sums up his conclusions on this interesting subject as follows:

"1. The supplying ovary has no influence upon the sex of the child.

"2. Male and female children result in about equal numbers from the fertilization of ova from either ovary.

"3. The causation of sex is probably not due to any factor in the unfertilized ovum.

"4. The 'chromosome theory' must be considered the only explanation of the causation of sex at present acceptable.

"5. The sex of an unborn child cannot be foretold, nor can either sex be produced at will, by any rules known at present."

# Heredity in Fiction

In Hergesheimer's novel of "The Three Black Pennys," * we have a highly modern interpretation of an inherited, nomadic strain in a Pennsylvania family, dating back to the 16th century. We are told that the earliest "black Penny"—whose personal life is unfortunately not included—was burned at the stake as a heretic in the England of Queen Mary's time. The three black Pennys of the novel are supposed to be re-appearances of this individual's salient characteristics—what are sometimes in popular parlance called "throw backs," at intervals in the family's career down the centuries to the present time.

Dr. Davenport, of Cold Spring Harbour, has made a study of the inheritance of the nomadic instinct. It appears to be an anti-social, wandering impulse that urges individuals to turn away from social groups, from their families and friends, and seek new and untried fields and countries—a desire to try their strength against the forces of Nature or alien civilizations, and to get away from the established social background into which they have been born but somehow do not fit. Dr. Davenport's pamphlet, "The Feebly-Inhibited—Nomadism or the Wandering Impulse," is based on a study of 100 families, embracing 616 individuals. Those of his conclusions that seem to us to throw light on Mr. Hergesheimer's story are as follows:

1. The true nomad shows no desire to settle down. He does not go to New Zealand or Kamchatka because he wants to settle there, but because he is impelled to go out from wherever his starting place happens to be. It is largely due to chance circumstance that he finally arrives at a particular place.

2. The wandering impulse is inherited

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*"The Three Black Pennys," by Joseph Hergesheimer, Alfred A. Knopf, Pub.

instinct. It reappears from time to time in individuals of certain families, and these families are naturally fairly frequent in America, since many of the early colonizers of this country owe their presence here to the operation of the nomadic instinct.

3. The anti-social desire to get away from the family hearth and the regulated community life appears much more frequently in men than in women. The instinct does not, however, seem to be inherited in a sex-linked manner, as are certain physical peculiarities, such as color-blindness, haemophilia (excessive bleeding), etc. Rather, the nomadic instinct appears to be sex-limited, that is, it is a peculiar expression of the sex-instinct, and in general it dies out in the individual when his sex-interest dies or is satisfied.

In the light of Dr. Davenport's investigations, the story of the "Three Black Pennys" is of unusual interest. Mr. Hergesheimer has, consciously or unconsciously, interwoven the actual possibilities of the operation of the inheritance of what in general we call the nomadic impulse with the artistic portrayal of its concrete reappearance in three individuals of different centuries, modified by changing environment and developing civilization. The first black Penny of the novel, Howat Penny, shows the anti-social instinct in its most primitive and direct form. He is a stormy young man of 25, of the 18th century, set in a background of virgin wilderness which it is his particular delight (and almost his sole occupation) to wander and hunt in. He is first presented to us, gun in hand, gazing after a distant flock of wild geese, after an all-day tramp through the woods. His father, Gilbert Penny, owns large tracts of land in Pennsylvania and is engaged in the manufacture of iron ore. Throughout the book the insistent beating of the hammers at the Forge, the background of iron, steel and wealth, typify the strength and sternness of the Penny men, their determination in the face of any obstacles to their desires. Howat Penny feels a keen kinship with his ancestor, the martyred heretic. His father puts it thus clearly: "Howat . . . is a black Penny. That is what we call them in our family. You see, the Pennys, some hundreds of years back, acquired a strong Welsh strain. I take it you are familiar with the Welsh—a solitary-living, dark lot. Unamenable to influence, reflect their country, I suppose, but lovers of music. . . . Now any one would think that such blood, so long ago, would have spread out, been diluted, in a thick English stock like the Pennys; or at least that we would all have had a little, here and there. But nothing of the sort; it sinks entirely out of sight for two or three and sometimes four generations; and then appears solid, in one individual, as unslacked as the pure, original thing. The last one was burned as a heretic in Mary's day; although I believe he would have equally stayed Catholic if the affair had been the other way around. Opposition's their breath." This is a very good popular description of the reappearance of a recessive (probably neurotic) strain in a family history. Howat Penny recognizes his own anti-social nature, acknowledges his lack of interest in the dull details of his father's business, although he is fascinated by the actual processes of iron-forging. He wants to go off into the "Endless Mountains"—the very name allures him—to penetrate to the far-distant French forts, where there are Indians, dangers, primeval forests and wild beasts. He is frankly disgusted and repelled by what he disdainfully calls the herding instinct, that holds the people in the little settlement close together, and prevents the one companion of his choice, a charcoal burner's daughter, from jeopardizing her chances of a safe and sane marriage by wandering off for a three-day jaunt into the hills with him. He thinks he has no interest in women as such—until he falls a victim to the seductive wife of his father's guest. Then he falls in love, one may almost say, with a crash. He remains primitive, almost savage, in his romantic aspect. His mother says to him: "It's your blackness, like powder. The explosion may kill. Nothing may be said. Life drags us along by the hair." The immediate cessation of Howat Penny's desire to go off into the wilderness with the rise of his passion for the woman he has selected for his own, is very well portrayed. All his iron determination is concentrated in meeting any and all obstacles that would prevent him from making her his wife. Her husband, an old man, very cold and worldly, not a sympathetic person, he simply refuses to consider as a human being at all. The background of the civilization of the "Provinces" of the 18th century, the isolation and the strenuousness of the environment in which Howat Penny lives, serve to soften somewhat the effect of his harsh and selfish attitude. The young wife, who at first deliberately lured him on, became his mistress in an incredibly short time, is a Polish woman, fresh from the soft, silky and meaningless seductions of the Court of King James. She would withdraw from what has become to her a terrifying situation, but fate and the black determination of Howat Penny are too much for her. The elderly husband dies suddenly and opportunely of what might now be diagnosed as acute appendicitis. Howat and the widow, Ludowika, are left confronting each other at his sudden death bed—she with a sensation of being trapped, looking for an escape.

The history of the Penny family is punctuated, as it were, by the appearance of the next black Penny in the succeeding century, the great, grandson of Howat Penny, Jasper Penny. As the generations pass and the American environment becomes more civilized, the form that the familiar unsocial strain takes changes into something more subtle, less primitive, though still perfectly explicit. The development of the iron industry, the growth in the wealth, and social importance of the Penny family, with the softening of fibre that luxury-associations bring, all contribute to the changing form of the nomadic instinct as it reappears. By the skillful device of portraying each succeeding black Penny later in life than his predecessor, Hergesheimer brings out the gradual decadence of the dominance of the physical element in the strain. Jasper Penny is presented as a wealthy, middle-aged man, still seeking an outlet for his insistent craving for something other, independent of the regularized life about him. He, too, feels his peculiar kinship with the other "black Pennys" of his race, particularly his great grandfather, Howat, whose ghostly presence fairly haunts him at times. Like Howat, Jasper Penny had been bound to society by the influence of women. He had sought escape within bondage first by selecting as his wife a spiritually exalted woman who, however, had been unable to stand the strain and had died after more years of estrangement than of intimacy; and secondly through an affair with a highly-emotional, physically alluring woman which ended disastrously, leaving Jasper with a small illegitimate daughter on his hands. Finally he again falls in love with a woman of a spiritual but this time also a more spirited type. She refuses to marry him so long as the mother of his child lives, and manages to withstand the familiar stormy, iron-black will of a black Penny. That in the end he has his way; that his mistress dies in time for him to marry the gentle but determined lady of his choice, and that she bears him a child at great cost to herself late in life, we find out in subsequent chapters. From the point of view of the story alone, the episode of Jasper Penny is perhaps the least impressive of the three. But as the interpretation of a transition period, the changes that advancing civilization and inherited associations bring about in even so violent and primitive a thing as the nomadic instinct, it is exceedingly interesting,

The last black Penny, the last of his

race through the legitimate line, is shown as a very old man, another Howat Penny. In him, the conflict between the fierce, anti-social instinct and the long line of inherited cultural associations has resulted in an almost wholly negative attitude toward life. He side-steps actual life, disdaining "the herd" quite as distinctly as the earlier, more virile Howat; and takes refuge in the artificial realm of operatic music, instead of in the virgin wilderness. He lives, in his old age, almost wholly in memories of the stereotyped, theatrical gaieties of his youth. And as he grows older and withdraws more and more from outside contacts, the memories of his race are interwoven with his personal experiences. Particularly the poignant experiences of the other Howat Penny come to him as ghostly sensations. He feels a "throbbing of his wrists" on one occasion, when we are reminded of the stormy Howat Penny of the 18th century, feeling the blood pounding in his wrists as he looks across his father's dinner table at "his" Ludowika. Although the forge-hammers have been silent for hundreds of years, the old man sometimes hears a strange, insistent beating, as of the regular blows of a distant forge. So strong are the inherited memories that one night, sitting alone in his study, he hears the patter of rain on the roof so clearly that he rushes out of doors—to find a clear, star-lit night. And we are reminded of the occasion when the lovers, Howat and Ludowika, first embraced, in a musty little storehouse with a thunderstorm pounding the roof. Through the romance of his highly modern young cousin, Marianna, the aged and fastidious Howat is dragged into some sort of contact with modern activities. But he withdraws from it all as completely as possible, retiring into himself and his racial memories. On his deathbed, his last vision links him once more with the Howat Penny of a more primitive time. "He moved his head with an infinity of labour, toward the clear, grey opening of the window, and saw the pattern of flying geese wavering across the tranquil sky."

The inheritance of the characteristics that Mr. Hergesheimer gives his "black Pennys" is entirely possible from a scientific point of view. On the question of the inheritance of racial memories, so-called, science has as yet too little data to make any statement.

# Family Fares in France

A railroad bill passed by the French Chamber of Deputies on December 31, 1919, proposes to encourage both large families and the railroads with one stroke of the pen. The railroads of France are in such plight that it is deemed necessary to increase passenger rates no less than 85 per cent, whereas the familiar problem of the decreasing birth-rate grows more pressing with every leap in the the cost of living. Under the new bill, families with more than four children may travel extensively at small cost. Those who travel third class will be given reduction in rates amounting to 30 per cent, if they have four children; a reduction of 40 per cent, if they have five; and 50 per cent if they have six or more. Whether they must bring the children along in order to convince the conductor is not stated in the press report of the bill. The details of the working of the measure have possibilities of a comic nature to any one familiar with the practice of "borrowing" children to impress the court in certain cases. Eugenically, the bill is very progressive in its intention, and we shall watch its application with great interest.

# Department of Physical Education

**Conducted by C. WARD CRAMPTON, M. D.**

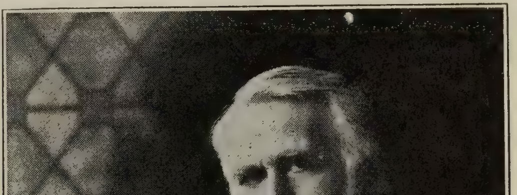
Director of the Department of Physical Education, New York City Public Schools, and
Dean of the Normal School of Physical Education, Battle Creek, Mich.

# Sally Grinnell's Grandson and His Successors

Sally Grinnell was born in Marshfield, Mass., on September 5, 1792. She married Martin Rogers, a Yankee shipbuilder as turdy as the keels he laid for the seacouring frigates of the young American Navy. Martin was of early pilgrim blood. His way-back grandfather, John Rogers, came over from London, on the Falcon in April, 1635. Sally's daughter, Caroline, was born during Monroe's administration. The lassie was wooed and won by Benjamin Sargent, and on September 28, 1849, their son, Dudley Allen Sargent, was born to be a vigorous power for good throughout the United States, a pioneer in physical education, a man to whom the science of health, the art of living and the practice of sportsmanship owe much of their character and progress.

Young Sargent lived by the water and learned to draw the ships and sailboats he saw in his father's shipyard. He learned to row, skate and swim as he learned to breathe, naturally as a matter of course and without special effort or training.

His father died when he was seven years of age, after which he went to live with his grandmother in his uncle's house at Hingham, Mass. He was, however, at home everywhere, in the town, in the forests, on the streams and on the surface of the harbor and the big sea beyond it. His uncle was a man of pioneer versatility, a farmer, merchant, manufacturer, general builder and contractor, and living with him, this sturdy New England lad had sturdy New England



Dudley Allen Sargent

training in many fundamental human activities. He worked with his hands on the farm, in the lumberyard and mills, cared for horses and did carpentry and masonry work. In the store he handled the fruit of the ground,—hay, grain, and potatoes; buying, selling, and learning the values of human labor, the ways of handling human produce, and the shrewd management of bargains and men.

His education from schools was sketchy and almost incidental. His comparatively infrequent visits to the schoolhouse, however, developed a taste for sound literature, and found expression in his facile and vigorous literary productions of later years. His real school was his uncle's store, where men came to buy and sell, to tell the news, to comment on what had happened, to discuss politics and the affairs of neighbors, of towns and cities, and to settle the fate of nations.—What a broad, sound, fundamental training in the affairs of life! How sterilized and artificial even the best schoolroom education of today seems in comparison to this rich, daily play of human interests!

During the Civil War, although a mere lad, he labored hard and long on the fortifications of the coast, and became general overseer in charge of building block houses. Hard, rough work, it was, but it gave Dudley Allen Sargent a powerful frame, with skilled mind and muscles. He was a natural gymnast, the leader of athletic sports among his fellows, walking on his hands and turning somersaults, and devising stunts.

At the age of twenty he went to Brunswick, Maine, with the firm intention of entering Bowdoin College but finding his academic training insufficient, he entered Brunswick High School instead. It is characteristic of Sargent that he began to teach gymnastics at the college while he was preparing to enter. This he continued all through his four-year course, from 1871 to 1875, and it is not on record that any regarded him lightly, even when he was a high school lad instructing college seniors.

During the time he was student instructor at Bowdoin, he invented and installed in the college gymnasium many of his peculiar strength-developing apparatus. In all probability, he was the first man to make a chest-weight, the idea for which he obtained originally from watching the walking beam traveling up and down on the side in wheel steamers. He developed the chest weight idea into many forms of apparatus which are now found in colleges and other gymnasia all over the world.

As he was completing his Junior year, his Grandmother Sally Grinnell Rogers died at the age of eighty-two years. Yet who shall say she is dead while the influence of the works of her grandson spread as ripples on a quiet lake ever more widely over the face of the earth to the blessing and advancement of men.

True to form, he went to Yale as both the director of the gymnasium and as a student in the Yale Medical School. Upon graduation, attracted by the facilities for post-graduate work in New York City, he spent a year in hospital work and in private teaching of physical training; and in 1879, when the Hemenway Gymnasium was completed, Dr. Sargent was called to be its first director.

This was the largest and finest college gymnasium of the time, and it was looked upon as the pioneer effort in college physical training, although other colleges, notably Cornell, had preceded Harvard in the organization and development of the physical training department.

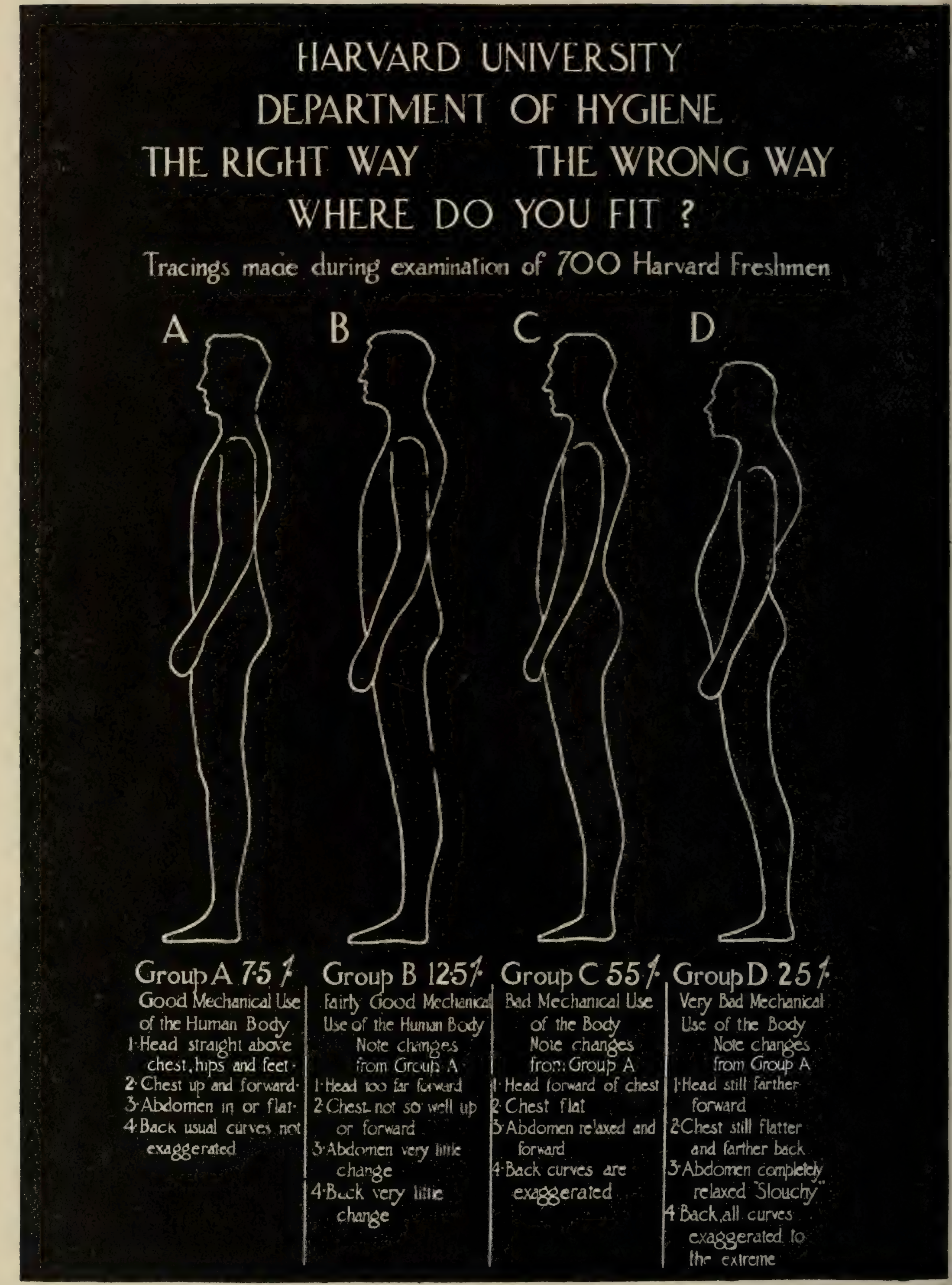
Dr. Sargent called the attention of the world to the importance of all-round physical development. He pointed out the beauty of the old Greek ideal and the wonderful perfection of symmetry of the Grecian statuary. He invented machines for developing the sets of muscles which were

Hemenway Gymnasium

found to be weaker and smaller than others. He instituted a method of physical examination and measurement, with a series of charts, by which it was determined whether or not a given muscle was normal in girth and strength. His examinations also gave attention to heart and lungs, and included about fifty measurements and strength tests. He published a handbook of developing exercises, by the use of which instructors could give individual prescription of exercise.

It is stated that at Harvard, fifty thousand examinations of this kind have been made, and that during the time that Dr. Sargent was there, the average height of the students increased from 67.7 inches to 68.7 inches, and their weight from 135.2 pounds to 141.6 pounds, while the average strength increased 25%.

He was one of those who pioneered in the scientific interpretations of measurements, using Galton's method. He took part in the organization of the College Physical Training Director's Association. He helped to develop the American Association for the Advancement of Physical Education and became its president. He is the author of many books on physical education. One of the most valuable contributions that he gave to the world was the result of his fighting against the idea that military drill as it existed subsequent to the Civil War was an adequate system of physical training. During these years it was held, even as now, that military drill was useful in developing the human body; and while Sargent worked vigorously for athletics and physical exercise as the foundation of mental alertness, military smart-



HARVARD UNIVERSITY
DEPARTMENT OF HYGIENE
THE RIGHT WAY THE WRONG WAY
WHERE DO YOU FIT ?

Tracings made during examination of 700 Harvard Freshmen

**Group A 7.5 %**
Good Mechanical Use of the Human Body
1 Head straight above chest, hips and feet
2 Chest up and forward
3 Abdomen in or flat
4 Back usual curves not exaggerated

**Group B 12.5 %**
Fairly Good Mechanical Use of the Human Body
Note changes from Group A
1 Head too far forward
2 Chest not so well up or forward
3 Abdomen very little change
4 Back very little change

**Group C 55 %**
Bad Mechanical Use of the Body
Note changes from Group A
1 Head forward of chest
2 Chest flat
3 Abdomen relaxed and forward
4 Back curves are exaggerated

**Group D 25 %**
Very Bad Mechanical Use of the Body
Note changes from Group A
1 Head still farther forward
2 Chest still flatter and farther back
3 Abdomen completely relaxed "Slouchy"
4 Back, all curves exaggerated to the extreme

ness and bodily endurance, he was the greatest contributor to our modern advanced conception of military training in contra distinction to military drill.

He was the pioneer in his demands for the giving of academic credit for college physical training. Bowdoin adopted it in 1889. Other colleges have followed, and by the latest statistics available (1917) as reported by F. N. Whittier, M. D., the present Director of Bowdoin College, out of two hundred and thirteen American institutions of collegiate standing, one hundred fourteen have adopted the plan of giving positive credits for physical training.

Sargent has been the guide, counsellor and friend of physical training, a sturdy defender of its rights, and always to be counted on for a vigorous and wise presentation of its importance to the human race. Upon the completion of fifty years of actual service, he retired from the direction of the Hemenway Gymnasium, and on December 27, 1919, he was given a testimonial dinner at the Hotel Vendome. Men who had known him and his excellent work gathered from all over the United States.

He has done the world an excellent service, and the work that he has started at Harvard and elsewhere must now be carried on by younger men and women. In these times, when the high pulse of war has carried its energy over into peace times with undiminished effects, threatening to wreck our social constitution, the preservation of the physical soundness and integrity of our young men and women is of the greatest importance. We must look to the successors of Sargent and his kind for the same sturdy common sense, wisdom and vigorous power that he gave to the world during the busy days of his active career.

## Sargent's Successors

Sargent's field was not only the Hemenway Gymnasium but the whole United States. We see his successors, men and women, in school, academy and high school gymnasium, and upon the athletic field, clear-eyed, erect, powerful and filled with a bright spirit of America today and to-morrow. In Harvard itself, we have a right to look for the best and most promising auspices.

After long consideration, the committee in charge have chosen a Western man, with as diversified training as Sargent's, a son of parents gone West from the New England coast, a graduate of a high school and college in Minnesota. Earning a degree as Bachelor of Physical Education in a Y. M. C. A. College at Springfield, Mass., and with other post-graduate study, he carries to his present task the best that can be given in the way of instruction. Like Sargent, he taught his mates so that he might work his way through college. In this case however, his taste and skill were in the sciences underlying physical training rather than its immediate practice. Though he was champion half-miler and college football player, he combined the office of athletic coach and instructor in science in a high school of the broad Middle West. He was a secretary and physical director in the Government service, in charge of the recreational activities of the Canal Zone (Panama), director of physical training and playgrounds in Mount Vernon, New York, supervisor of playgrounds, Assistant State Inspector of Physical Training of the Military Training Commission of New York State, special lecturer in various schools. He has had an experience covering much of the Western continent and touching the essential phases of American life from farm, country and city schools, State organization, army engineering and academic affairs. A young man of proven administrative worth and noted for his ability, wisdom and common sense,—William H. Geer.

When Dr. Thomas A. Storey left the directorship of physical training of the schools of the State of New York to become secretary of the great Inter-Depart-mental Hygiene Board at Washington, Geer was chosen to be his successor, and the great responsibility for the health and physical instruction of nearly two million children fell upon his shoulders on July 1, 1919. Almost immediately, however, came the call to fill Dr. Sargent's place.

William H. Geer

Associated with him, will be Daniel J. Kelly, Geer's class-mate in Springfield Y. M. C. A. College, graduate of Worcester Academy, a member of its track team, and captain of its baseball and football teams. At Springfield Y. M. C. A. College he was again football captain. Put together all you like and admire in a college athlete, add a dash of Irish, and mix the whole with a splendid spirit of American idealism, and you have Kelly.

These young professors go to Harvard to show the youth of Cambridge that real athletics and real physical training integrates with scholarship, refinement and human college life. They are already breaking down the idea that physical education is merely a matter of dumb-bells, chest-weights and gymnasiums, and substituting the up-to-date idea that physical training is the thing that makes life more brilliant, powerful and worthy.

## What Harvard Is Doing

Shortly after the signing of the armistice, the Board of Overseers of Harvard College recommended the adoption of some plan of compulsion of physical training. The Faculty members of the Athletic Committee, Professor Roger B. Merriman, Professor C. N. Greenough, and Dr. Roger I. Lee, recommended the participation by all members of the Freshman Class in some approved form of physical activity for three periods of one hour a day weekly, and in addition that every Freshman should have instruction in the principles underlying the care of the body. The Faculty adopted the recommendations of the committee, and the corporation appointed a Director of Physical Education, and the work was put under way. A course of fifteen half-hour weekly lectures is being given on the subject of mental hygiene, sex hygiene, proper clothing, bathing, diet, constipation, elements of sanitation, exercise and fatigue.

To meet the exercise requirement, instructors were engaged to take charge of the inter-dormitory athletic competitions, the five o'clock gymnasium classes open to everybody in the University, special corrective exercises, the physical examinations, indoor-baseball, basketball, fencing, wrestling, swimming and the like, which are offered not only to the Freshmen but to the whole college.

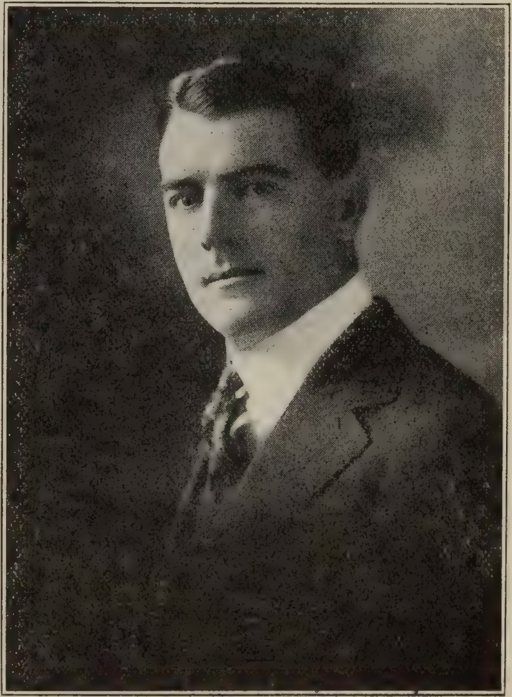
The Freshmen were notified at the beginning of the Fall term that they would be required to take exercise. At first there were protests. The hard-working student "who did not have time for exercise," the lazy student, the boy who was working his way through college, the cigarette-smoking-lounge lizard to whom exercise was actually painful, all complained and tried to be relieved of the burden. Some went to the Dean, others to the Administrative Board, but all failed to escape the requirement. The latest reports indicate that all of the above kinds and classes, with the exception of the last-mentioned tobacco-stained individuals have come to the director expressing their appreciation of the privilege of being permitted to exercise, and in some cases asking for additional time.

The Freshmen took to the idea of compulsory physical training with enthusiasm when they found out that it did not mean something absolutely foreign to fun. This was explained at a general mass-meeting. All were given a copy of a picture depicting in silhouette form the scientific result of the examination of tracings made of seven hundred Harvard Freshmen, showing the right way and the wrong way of standing. This at once aroused the student interest and pointed a way toward actual physical improvement in a fashion both definite and convincing. They were then given a set of printed directions which gave in full the exercise requirement and the system by which they could elect from a series of physical activities what they most desired to do.

The men already training in various forms of athletics, football, basketball, and crew found that so long as they faithfully carried out the instructions of their coaches, which were definitely calculated to keep them in good physical condition and in good training, they were satisfying the full measure of the new requirements. Others who had a taste for one or more forms of athletic sports found that they could elect football, soccer, rowing, baseball, track or cross-country running; and 318 men did so. For those who did not elect one of these sports there were provided indoor-sections in basketball, baseball, handball and swimming, squash, racquets, boxing or regular gymnasium indoor class work.

Most of the members of the Freshman class are housed in three dormitories, among which there is traditional rivalry for various kinds of distinction and supremacy. This was seized upon by Dan. Kelly, who organized teams for various sport leading to inter-dormitory meets. Not satisfied with one representative team, he organized two and even a third to compete against similar teams. This provided a keen incentive for all dormitory students who were unable to find places on the regular Freshman teams.

In the past the young Freshman "who came out" either was successful in getting placed on the team or he was not. If he were successful, he was trained hard and got, as a rule, too much exercise. If he were unsuccessful, he was thrown off the squad, and got none at all. This new



Daniel J. Kelly

method evens matters up in the most democratic fashion.

The posture outlines as given to the students are the results of the work of Dr. Lloyd P. Brown, who assisted Dr. Roger I. Lee, the Professor of Hygiene under whose general direction the physical training department is working. It was stimulated by the results of the examinations of recruits for the United States army, in which it was found that so many men were disabled because of bad mechanical adjustments, particularly of the spine and the feet. The method of rating is as follows: "The individual's feet are carefully examined, and he is questioned as to possible previous trouble with his feet. We have discarded the former and now exploded idea that a man's feet can be judged purely on a basis as to whether he has had previous trouble with his feet. The individual is then scrutinized from the point of view of how he stands, and whether his statics is satisfactory from a mechanical point of view. Taking both of these factors into consideration, he is then graded A, B, C, D. In arriving at this rating we attempted to adopt the same mental attitude that one might adopt in deciding upon college grades for academic work. A and B are the type whose bodily mechanics are commendable, while C and D are less satisfactory.

The points which we noted are as follows: *Group A:* Good Mechanical Use of the Human Body. 1. Head, straight above chest, hips and feet. 2. Chest, up and forward. 3. Abdomen, in or flat. 4. Back, usual curves not exaggerated. *Group B:* Fairly Good Mechanical Use of the Human Body. 1. Head, too far forward. 2. Chest, not so well up or forward. 3. Abdomen, very little change. 4. Back, very little change. *Group C:* Bad Mechanical Use of the Body. 1. Head, forward of chest. 2. Chest, flat. 3. Abdomen, relaxed and forward. 4. Back, curves are exaggerated. *Group D:* Very Bad Mechanical Use of the Body. 1. Head, still farther forward. 2. Chest, still flatter and farther back. 3. Abdomen, completely relaxed "Slouchy." 4. Back, all curves exaggerated to the extreme. In 1916, when we only took into consideration how the man stood, we found the percentages were as follows: A. 7.5% B 12.5%, C 55%, D 25%. In 1919, taking into consideration both how the individual stood and how he used his feet, we got the following percentage, A 97%, B 14.8%,C 49.3%, D 34.8%. It is of some interest that when examined by the same physicians, so that personal equation is largely eliminated, 264 unclassified men who were examined at the same time and who averaged two years older than the Freshmen present similar figures, with the exception that 4% more of the men were rated as C and 4% less as D.

"The outstanding feature of the results of these studies in bodily mechanics is that the examination both in 1916 and 1919 show that 80% of our Freshmen do not use their bodies well. To be sure, their poor bodily mechanics is offset by their youth and otherwise good physical condition. The result of this test certainly suggests that our preparatory schools might do much toward preventing poor habits of bodily use and also that it is desirable for the college to attempt correction. It is planned to demonstrate in lectures to the entire class the proper mechanical use of the body and feet, and it is also planned to give those in group D whose bodily mechanics is unsatisfactory, a certain amount of intensive instruction in small groups. It is confidently expected that with a simple explanation of bodily mechanics, and with the requirement of regular enjoyable physical exercise, many of these men will show definite improvement on re-examination."

A special instructor has already met the 179 men in group D, and classified them according to their special needs. He has also made tracings by a device similar to the schematograph. Each man was given a duplicate of his tracing, and the original was filed with the medical examination card. After the recess period the men in this group will be required to report for special exercise until there is an evidence of improvement in some of their bodily defects.

Other usable results of the examinations are the facts that 9.5% had had their appendixes removed, while 43.6% had already parted with their tonsils. These are figures which indicate that the public as represented by their sons who go to Harvard are measureably well-educated as to the danger of harboring focal infections.

The nature of the operation on the tonsil is also important, for in 1914, when the record was first taken, it was found that a very large proportion of the Freshmen who had had their tonsils removed had only a portion of them removed, instead of the clean dissection. In 1919 the complete removal was the rule.

As further evidence of the increasing enlightenment of periods on sanitary and hygienic matters, it was found that very few Freshmen had neglected teeth, whereas in 1914 neglect was exceedingly common. However, 5% of the Freshmen had not been vaccinated against smallpox, although over one-fifth of them had been innoculated against typhoid. Of special interest in this connection is the series of reports on smoking given below:

Freshmen, Harvard, 1919, Tobacco Statistics

| Age starting to smoke.. | 6 | 9 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 25 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of students... |  | 1 | 1 |  | 4 | 3 | 6 | 22 | 34 | 30 | 2 |  | 1 |  | 1 | 105 |

| Cigarettes per day..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 14 | 15 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of students... | 5 | 11 | 10 | 13 | 16 | 9 | 4 | 7 | 1 | 18 | 2 | 1 | 2 | 4 |

| Pipes per day......... | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|---|---|---|---|---|---|---|---|---|
| Number of students... | 22 | 24 | 10 | 14 | 6 | 3 | 1 | 2 |

| Cigars per day........ | 1 | 2 |
|---|---|---|
| Number of students... | 1 | 4 |

Thus we have at Harvard a re-adaptation of the physical training idea of Health, Happiness and Efficiency to the practical working out of the students' daily life. What is being done at Harvard is being duplicated in colleges all over the United States. It augurs well for the character of manhood that will be called upon to manage the affairs of the United States in the next several decades.

# Home Economics

Conducted by LENNA FRANCES COOPER, B. S.

Dean, School of Home Economics, Battle Creek Sanitarium

# Home Economics as a Community Interest

One of the principal lessons brought home to us by the war is that no man can live unto himself alone—that the effects upon an individual are reflected in the community, and that in a very large measure we are in reality our brother's keeper. Our horizon has been considerably broadened, and we are now realizing that there must be co-operation on the part of the individuals of the community for the attainment of the greatest efficiency of that community.

There is no more important group of community interests than those which are bound up under the head of Home Economics, since in its truer and broader sense it includes everything of especial interest to the home.

The home is without question our most important institution. It is the place where citizens are born and reared. Homemaking is therefore nation-making. As a vocation more people are engaged in homemaking than in any other occupation. According to the 1918 estimated census there were 105,000,000 inhabitants of the United States. Of this number forty-four and a half million were girls and women. About twenty-five million were twenty or more years of age. Eight per cent of this number were married, and no doubt a large proportion of the remainder would in time marry. At the lowest estimate there are at least twenty million women engaged in the vocation of homemaking. The number of people directly influenced by this vocation is at least one hundred million, or about ninety-five percent of the population.

The war has also brought home to us the value of child life as a national asset. Many of the European nations are very seriously concerned as to the future of their national life as they have come to realize that the number of their citizens, together with their physical and mental efficiency, will determine leadership among the nations. It, therefore, is important that every child, as a potential citizen, should be given not only the best possible beginning in life but the most favorable conditions for growth and development. The three hundred thousand children under one year of age that die annually in the United States are certainly worth saving. The Children's Bureau have found that this high death-rate among infants is due chiefly to two factors, namely, poverty and ignorance. Education cannot take the place of an adequate income, neither does an adequate income protect a child against the ravages of ignorance.

It is quite likely that changes in our national economic policy will have to be adopted before poverty can be eliminated from our midst. The constantly increasing cost of commodities is a problem which is taxing to even the most expertly trained women. No amount of training can increase the actual purchasing value of the dollar. It is very true, however, that the knowledge gained in the broader phases of Home Economics assists very materially in the wise expenditure of the income. But, valuable as this training is, it cannot entirely solve the problem of the high cost of living. There is no question but that this is a broad economic problem which will require for its solution the most expert economists of our land as well as the attention of our legislators.

Of the three hundred thousand infants who die annually the Children's Bureau estimate that more than half are lost on account of the ignorance of the mother, the greatest mortality being due to gastric and intestinal disorders, which are almost entirely preventable. This is shown by a chart published by the Children's Bureau, United States Department of Labor, Washington. There are also thousands of still-born, the cause for which is ofttimes ignorance on the part of the mother as to her own care and feeding.

There seem to be no figures available which show the percent of children physically imperfect. The results of the physical examinations of the two and a half million men for military service during our recent war may shed some light on the question. About one-third of these were rejected as unfit for military duty. Investigations by the Children's Bureau as to the cause of this physical disability reveal the fact that it was due chiefly to the lack of medical attention or to malnutrition before six years of age—a state of affairs which is directly traceable to the lack of knowledge on the part of the mothers.

Without question the proper nutrition of the child is the most important and far-reaching responsibility of the mother, and yet malnutrition among children is increasing every year. Dr. Thomas Wood of Columbia University, New York City, has estimated that from fifteen to twenty-five per cent of the children are under-nourished. Under-nourishment may not mean a quantitative lack of food. It is quite as likely to be a qualitative lack, due to an insufficiency of some essential food constituent. It therefore becomes the duty of mothers, not only as individuals but as organizations such as our women's clubs, to give very careful thought and consideration to the subject of nutrition and, having mastered at least the elementary principles, to see that they are applied in such a way that the children of the community may be benefited thereby.

A few years ago the subject of nutrition was a very complicated one. There were many theories, founded chiefly upon chemical analyses. There are still many things which will require further investigation, but it is consoling to know that the essential principles have been reduced to such simple terms that "he who runs may read." Nutritional investigations have within the last two decades taken on a practical phase. Some few years ago Osborne and Mendel of Yale University found that they were unable successfully to feed animals upon what they considered, from an analytical standpoint, to be a perfectly balanced ration. Repeated experiments along this line demonstrated that foodstuffs contained some constituent which had not heretofore been expressed by a chemical formula. Dr. McCollum, now of Johns Hopkins University, formerly of Wisconsin, has contributed a vast fund of information to the subject of nutrition through his experiments upon rats, mice, guinea pigs and other small animals. Every woman should be familiar with the results of his experiments.

The results of the experiments of Osborne, Mendel and McCollum, which have been confirmed by many other investigators, would indicate that one of the most serious

THE SCHOOL LUNCH

defects in children's dietaries at the present time is an insufficient quantity of milk. The best nutrition experts believe that every child under six or seven years of age should have at least a pint and a half of milk a day and one pint a day up to ten years of age.

Milk surveys conducted in various cities and localities would indicate that the actual quantity consumed is far below this amount. A survey made by the Children's Bureau of the United States Department of Labor in Baltimore in 1917 showed that out of 756 children between the ages of two and seven only 38 per cent are having fresh milk to drink, as against 60 per cent the year previous. Dr. McCollum is authority for the statement that in Chicago in 1917 1,250,000 quarts of milk were being used, while in 1918 only 700,000 quarts were consumed. New York dropped in its consumption almost 50 per cent. A survey made in Battle Creek by the School of Home Economics students, revealed the fact that 13.3 per cent of the children under ten years of age were having neither milk nor butter and that the average consumption of milk in all of the 225 families visited was less than one-half pint per day.

It is almost a universal rule that where milk is withheld from children's dietaries tea and coffee are substituted, thus adding to the already bad effect of the lack of insufficient milk.

In every city a goodly number of the population fall ill of some disease which necessitates expert medical care. Many of these unfortunate ones do not possess homes of their own, and still others require medical care which it is almost impossible to have in a home. Therefore, hospitals have come into existence, and their patronage is increasing year by year. Hospitals, inasmuch as they serve the public, are institutions in which all communities should be directly interested. A few years ago, fair

Cooking Laboratory

to bad cooking in hospitals was almost proverbial. Physicians and superintendents, however, are coming to realize that the recovery of their patients depends in no small measure upon their proper feeding. It should be a matter of public concern that every hospital have as a member of its staff a person fitted to plan regular and special dietaries both for patients and employees and to supervise the preparation and cooking of all foods served.

The demand for this type of trained women has become so great that the various schools of Home Economics giving such courses are unable to meet the demand. Not only should the dietary of every hospital be planned by a nutrition expert but every institution where people are congregated. This applies particularly to children's homes, since the nutrition of the child is such an exceedingly important factor in its development. There are many other ways in which trained Home Economics women can serve the community; but the greatest drawback to all of this is the lack of trained women. Every girl, whether she ever serves the public in a professional way or not, should devote at least two years of her school life to the study of Home Economics in its broader aspect, to fit her for the responsibilities of homekeeping, which comes to at least 80 per cent of the women of our country sometime during their lifetime.

Home Economics is a much broader subject than is popularly believed. It is valuable to even those who do not follow homemaking as a vocation, since the training which it gives is largely from the standpoint of a consumer. A woman must buy clothes and she must select foods. Therefore, the training as a consumer is of importance to every woman. Cooking and sewing stand out in the minds of the populace as the two things which constitute Home Economics. They are important subjects, but the training is of a much broader scope. While there is considerable difference in the training offered by various schools, the following course of study offered at the Battle Creek Sanitarium School of Home Economics is given as representing a typical curriculum as employed in the higher schools of learning in the country, as is evidenced by the fact that its graduates receive two years' credit in the higher colleges and universities where Home Economics is given a prominent place. The course of study here given is intended particularly for the training of dietitians for hospitals, school dormitories, children's homes, school lunch rooms, cafeterias, and similar types of institutions.

## Course for Dietitians—2 years

### Junior Year

#### First Semester

| *Subject* | *Credits* |
|---|---|
| General Chemistry | 5 |
| General Biology | 3 |
| Physiology | 2 |
| Household Management | 3 |
| Cookery | 3 |
| Physical Training | 1 |

#### Second Semester

| *Subject* | *Credits* |
|---|---|
| General Chemistry | 5 |
| Home Nursing | 1 |
| Physiology | 3 |
| Cookery | 3 |
| English | 2 |
| Marketing | 1 |
| Sociology | 1 |
| Physical Training | 1 |

### Senior Year

#### First Semester

| *Subject* | *Credits* |
|---|---|
| Organic Chemistry | 6 |
| Principles of Education | 1 |
| Institutional Management | 1 |
| Advanced Cookery | 2 |
| Demonstration and Institutional Cookery | 2 |
| Textiles | 1 |
| Personal Hygiene | 1 |
| Economics | 2 |
| Physical Training | 1 |

#### Second Semester

| *Subject* | *Credits* |
|---|---|
| Chemistry of Foods and Textiles | 4 |
| Bacteriology | 2 |

Children's Class in Sewing

| | |
|---|---|
| Dietetics | 4 |
| Medical Dietetics | 3 |
| Advanced Cookery | 2 |
| Institutional Administration and Organization | 1 |
| Physical Training | 1 |

In addition to the above course another one, two years in length, is also given, for the training of teachers for both public and private schools, for the work of the visiting housekeeper, visiting dietitian, extension worker, also demonstration and lecture workers.

## Course for Teachers of Home Economics —2 Years

### Junior Year

(Program is the same as outlined in Course for Dietitians)

### Senior Year

#### First Semester

| *Subject* | *Credits* |
|---|---|
| Household Chemistry | 3 |
| Education | 4 |
| Economics | 2 |
| Advanced Cookery | 2 |
| Demonstration Cookery | 1 |
| Textiles | 1 |
| Sewing | 2 |
| Personal Hygiene | 1 |
| Physical Training | 1 |

#### Second Semester

| *Subject* | *Credits* |
|---|---|
| Bacteriology | 2 |
| Dietetics | 4 |
| Medical Dietetics | 3 |
| Education | 2 |
| Advanced Cookery | 2 |
| Sewing | 2 |
| Millinery | 1 |
| Physical Training | 1 |

The practical nature of the above courses makes it important that students should receive as a part of their school training actual experience in the lines of work for which they are training. Arrangements have therefore been made with the school board of the city of Battle Creek whereby the students personally conduct two of the school lunch rooms in the city schools, planning the menu, purchasing the food, as well as preparing it, and assisting and supervising the serving. This requires very careful planning, since the children pay only 15c for a hearty noonday lunch. Arrangements have also been made with the school board to send girls of the seventh and eighth grades into the class rooms of the school of Home Economics for the learning of cooking and sewing, thus giving the students of the teachers' course practical experience in presenting these subjects. Additional opportunities for experience are given in the various class rooms and departments of the Battle Creek Sanitarium, practical experience being thus afforded in almost every phase of the subjects offered in the course. The Woman's League of Battle Creek feel that they have undertaken no more important work for the children of the city than the establishment of a milk station in a school building in one of the poor sections of the city. The teachers and visiting school nurses are very enthusiastic over the results obtained, and an urgent request has come for the establishment of another milk station. The patronage of the milk station, however, is voluntary and does not reach every child.

Educational propaganda should accompany the work of the milk station. Deficiencies of the home dietary may be largely made up through the hot school lunch, as milk should always form an important part of the menus of every such lunch-room. Every school, rural as well as city, where children remain during the noon hour, should supply a warm lunch, consisting of at least one hot dish; and teachers should be required to give some supervision to the lunch. It has been found that a supervised noon-day lunch may be made to contribute very largely to the social standards and ideals of the home as well as to the physical welfare of the children. In the State of Washington a hot school lunch is required in every school where children remain during the noon hour. Your State should not be behind in this movement.

This is an age of specialization. The best specialists of the land are giving much time and thought to the physical welfare of the school children. Clinics of various kinds have been formed, calculated to add to the physical efficiency of the children. Among the newer clinics is that of the nutrition clinic, which is operating successfully in some of our larger Eastern cities. Under the direction of a nutrition expert, through a system of merit marks, the children who fall below the normal in weight and height become interested in reaching the normal proportions. The nutrition clinic will in all probability become one of the greatest factors in correcting the dietary deficiencies of school children. The visiting housekeeper or visiting dietitian are also important factors in carrying the educational propaganda into the homes, particularly of the foreign-born. This, by the way, is one of the most important means of Americanizing the homes of the foreign-born. The neighborly visit to the homes and, incidentally, the carrying of some tasty dish from our own table, is probably one of the most helpful ways of interesting foreign-born women in American ways. We probably do not realize that many of our own fruits and vegetables, as well as our manufactured products, are entirely new to them, and that being deprived of many of the foods with which they are familiar, their dietaries are likely to become very restricted.

In view of the importance of Home Economics training and its influence upon every member of the household and the community at large, it is hoped that every girl graduating from high school will realize that her education is not complete until she has spent at least two more school years in fitting herself for that highest of callings—that of being a woman. Any additional information regarding the School of Home Economics and the courses offered will be gladly furnished by addressing the Registrar, Sanitarium School of Home Economics, Battle Creek, Michigan.

Living Room in One of the School of Home Economics Cottages

# The Mothers' Round Table

**Conducted by MRS. E. E. KELLOGG**

# Safeguarding the Children from Vice

With vice everywhere prevalent, the parents who hope to keep their children in the path of virtue must be awake to their trust, studying to understand the hundreds of different avenues by which depraving influences and temptations may reach their homes, and striving to increase the safeguards around their children. They must face the fact that their children, like themselves, are by nature sinful, and liable to stray into forbidden paths; hence they must endeavor to hedge up the way against evil by right training, by the formation of correct habits, and by the environments of a pure home atmosphere.

Few other influences have such power to keep a person in the path of rectitude as that of right home training for children. Upon parents rests the responsibility of this training. They stand before God as surety for those human beings, made in his likeness, whom he has entrusted to their care. Parents may shrink from this self-assumed responsibility, ignore it, shirk it, try to delegate it to others, but it is still there—they cannot escape it.

## Inherited Tendencies

To train a child wisely, to develop within him a strength that shall dominate over weakness, to inspire in him such a love for that which is pure and good that evil will be distasteful, is the duty incumbent upon all parents. If, through their mistakes or those of their ancestors, their child has inherited a nature morbidly susceptible to evil, ready to fall into temptation at the slightest provocation, then is their responsibility indeed greatly increased, and special watchfulness and care are needed to intercept temptation, to build up the wall within at the points where it is weakest, and to so accustom the child to a pure moral atmosphere that he cannot breathe freely in any other.

Inherited tendencies may be overcome or greatly modified by proper training, but this work should not be neglected till the germs of evil have sprouted, and their roots become firmly grounded, with the hope of then crowding them out. The soil should rather be preoccupied with good seed, and thus the mischief-making seeds be prevented from germinating. Said Dr. Talmage, "Before they sow wild oats, get them to sow wheat and barley. You will thus fill the measure with good corn, and there will be no more room for husks." Herein lies one of the highest responsibilities of parenthood—to so nourish and cultivate right tendencies that the evil ones will be choked out.

One of the chief reasons why so many homes are saddened by the terrible revelation that a son or a daughter has gone astray lies in the fact that parents do not awaken to their responsibilities early enough in the life of their children. They think, as they watch their little one in its cradle or guide its first faltering footsteps, that when the child grows older, their responsibilities will increase; but that if for the present his physical needs are well supplied, and the enjoyment of his waking hours assured, it is all sufficient. The child's thoughts and tendencies are left to chance during the susceptible period when every word he hears and every act he sees may serve to influence his whole life.

### Impressionable Years

In these impressionable years the seeds of both good and evil take deeper root because the child is lacking in the power of resistance which comes with later years. If parents neglect to sow and tend the good seeds at this important period, while they are asleep to duty the enemy will come and sow tares and weeds. If these first germs of evil are allowed to take root and unfold, it need scarcely be wondered at, that in later years rank growths of sin should flourish in the soil, and yield their harvest in unchaste lives. The embryo man should be started along the path which the man of mature years ought to tread.

We are so accustomed to associate impurity with some gross breach of moral rectitude that the early beginnings, the first steps, the little deviations, the trifling words and acts, are overlooked and neglected. The flood-gates are closed against the great temptations, but the little drops which go to swell the mighty river of impurity too often fall unheeded; and yet these little things—mere trifles they may appear to be—sum up into a vast column, the total of which is appalling.

The change from virtue to vice is not a sudden one. A long preparatory process goes on in the heart before the individual commits open sin. Parents must study to recognize the first indications of evil, and check them at the outset. This they can only do by maintaining the closest intimacy with their children, by studying to know them and their needs, by keeping in full sympathy with them—in other words, by "living with their children." This sympathetic relation must begin with the very dawn of life, grow with the child, and overspread with loving light his whole existence. The wise parent who establishes such an intimate fellowship with his children will find it one of the strongest barriers against evil that could be erected. It will, however, require much painstaking effort, trouble, and self-sacrifice on his part to perpetuate such a relation, for it must be continuous, not merely spasmodic, in its nature.

### Why Parents Fail

The secret of so many parental failures lies in their unwillingness to sacrifice the love of personal ease and enjoyment, to set aside the demands of society, the engrossing cares of business, or other of their own selfish ends, for the sake of their children. It is so much easier to turn the little ones out-of-doors to hunt up their own amusements than to give up one's time to their instructions and diversions; so much less trouble to allow them to select their own companions than to accord them one's personal companionship, that a dangerously large proportion of parents share the sentiments of a mother who, when asked by a friend concerning the welfare of her little ones, replied, "I am so thankful to have them out of the way that I don't trouble myself to find out where they are so long as they come in for their meals at the proper time, and are in in time to go to bed at night." Yet this mother, a prominent church member, kept two servants, and was in nowise so hampered as to be unable to give her children watchful care. One fears to think of the risk such parents are carelessly and perhaps thoughtlessly taking, particularly when it is remembered that before the child has reached the age of ten years, the parents have done half they will ever be able to do toward the formation of its character.

### Teach Self-Control

Among those elements of character which, if early established and firmly rooted, will help to antagonize vice in later years, is self-control. The boy who is trained in childhood to intelligent self-mastery over his appetites and passions, will grow to manhood strong to resist the blind leading of impulse. Self-control is not, however, an innate instinct, but a quality that must be cultivated by judicious training; hence it is a matter resting largely in the hands of the parents. Much of the child's inability to govern himself in later years is due to his mismanagement in infancy. It is so much easier to give baby what he cries for, to consult his inclinations and whims, than to make the effort necessary to restrain and control him; and the little one very soon learns that he is master of the situation, that what he cries for he will get, and so he cries for everything he wants. If the coveted thing is not immediately forthcoming, he cries the harder.

The little one was not angry when he began to cry; he was simply using the means he had at command, which from previous experience he supposed would be effective in bringing about the result he desired; and when at first his efforts seemed unavailing, he increased them until he became wholly excited and unbalanced. If he is permitted frequently to bring himself into this condition, the habit of uncontrol will soon take possession of him. The oftener he gets into such a state, the easier it is to again lose control of himself. All bad habits as well as all good habits gain force and strength by exercise. Through thoughtless mismanagement parents may thus foster a condition of uncontrol which years of after discipline can never quite correct. A parent who duly appreciates the great work that every human being has to do in attaining self-government will assist the process from the very first by every means within his power.

Self-control can be made much easier for the child by careful attention to his physical habits, particularly as regards his diet. A child fed largely upon stimulating foods will be likely to have a fiery and excitable disposition; while if by careful feeding his physical condition is kept in an unexcitable state, the temptation to give way to irritability is lessened, and self-control made more easy. While children are taught to do right, it should be made as difficult as possible for them to do wrong. All hygienic measures, such as good, wholesome food, plenty of sleep, proper clothing, abundant air and exercise, lend a most salutary influence toward the upbuilding of self-control.

# Country Life for Children

In a recent issue of the *Sabbath Recorder,* Henry Turner Bailey, a director of the Cleveland School of Art, has something interesting to say about out-door life for children. We quote as follows:

"All children ought to be familiar with the open country. They should know the joy of playing in healthful mud, of paddling in clean water, of hearing roosters call up the sun, and birds sing praises to God for the new day.

"They should have the vision of pure skies enriched at dawn and sunset with unspeakable glory; of dew-drenched mornings flashing with priceless gems; of grain fields and woodlands yielding to the feet of the wind; of the vast night sky 'all throbbing and panting with stars.'

"They should feel the joy of seed-time and harvest, of dazzling summer noons, and of creaking, glittering winter nights. They should live with flowers and butterflies, with the wild things that have made possible the world of fable.

"They should experience the thrill of going barefoot, of being out in the rain without umbrellas and rubber coats and overshoes; of riding a white birch, of sliding down pine boughs, of climbing ledges and tall trees, of diving head first into a transparent pool.

"They ought to know the smell of wet earth, of new mown hay; of the blossoming wild thyme and eglantine; of an apple orchard in May and of a pine forest in July; of the crushed leaves of wax myrtle, sweet fern, mint and fir; of the breath of cattle and of fog blown inland from the sea.

"They should hear the answer the trees make to the rain and to the wind; the sound of rippling and falling water; the muffled roar of the sea in a storm, and its lisping and laughing and clapping of hands in a stiff breeze. They should know the sound of the bees in a plum tree in May, of frogs in a bog in April, of grasshoppers along the roadsides in June, of crickets out in the dark in September. They should hear a leafless ash hum, a pine sigh, old trees groan in the forest, and the floating ice in a brook making its incomparable music beneath the frozen crystal roof of some flooded glade.

"They should have a chance to chase butterflies, to catch fish, to ride on a load of hay, to camp out, to cook over an open fire, to tramp through new country, and to sleep under the open sky. They should have the fun of driving a horse, paddling a canoe, and sailing a boat, and of discovering that Nature will honor the humblest seed they plant.

"Things that children can do in cities are not to be compared with such country activities. Out of the country and its experiences has come and always will come the most stimulating and healthful art of the world. One can not appreciate and enjoy to the full Nature-books, novels, histories, poems, pictures, or even musical compositions, who has not had in his youth the blessed contact with the world of Nature.

"I do not forget what cities have done for us, and always must do; but one can get all the best a city has to yield by visiting, whereas one can not reap all the harvests of the country except by living there in childhood. And I feel somehow that such a life in the country is the birthright of every child. There is truth in Cowper's statement, that God made the country and man made the town.

"I believe that every child of God has a right to see the country—the house his heavenly Father made for him—unobstructed by brick walls, unspoiled by filth and undimmed by smoke. And one of these days, somehow, all children born into the world will be given a chance to enjoy to the full their inspiring patrimony."

# Bottle-Fed Infants

Recent studies of infant nutrition have shown that one of the reasons for the poor nutrition of very young bottle-fed children, as shown by failure to grow at the proper rate, is the lack of the growth-promoting vitamin which is found in abundance in mother's milk and in full cow's milk, but is necessarily diminished in proportion when water is added to the cow's milk in diluting it. The dilution is necessary, but should be compensated by the addition of the essential vitamin. This may be obtained from vegetables, for example, by adding thin potato soup to the diluted milk.

Another plan is the use of malt sugar in place of cane sugar. Cane sugar is a pure carbohydrate product. It contains nothing but sugar and is intensely sweet. Malt sugar is less sweet—an advantage, because in this respect it more nearly resembles lactose, the natural sugar of milk.

Malt sugar also has the great advantage of containing the precious vitamins in concentrated form, as well as other things essential to nutrition. Malt sugar, in other words, is something more than sugar. Cane sugar is simply sugar—nothing more or less.

Malt sugar contains considerable quantities of lime and of iron. The last-named element is an important addition to cow's milk which is very deficient in iron. In diluted cow's milk, in fact, the amount of iron is so small as to be practically negligible. The young infant needs iron in the blood as its body builds and increases in size. This is an important particular in which malt sugar is superior to lactose, or milk sugar, which contains no iron.

Malt sugar has also another important advantage which has only recently come to be appreciated; namely, the considerable amount of dextrin which it contains. Pavlov showed the great value of dextrin as a peptogenic aid, that is, a substance which actively promotes the digestive processes. This makes malt sugar of great importance as an aid to the feeble digestive powers of the average infant.

Torrey, Rettger and others have recently shown dextrin to be one of the best of all substances for promoting the growth of the protective germs. These are acid-forming germs which make their appearance in the colon of the breast-fed infant within a few hours after birth, the *B. bifidus* and *B. acidophilus* described by Tissier of the Pasteur Institute.

When cow's milk is fed, these essential protective germs tend to disappear, their place being taken by putrefactive germs which produce poisons causing dark, foul-smelling stools, fretfulness, restless sleep, lack of appetite, delayed growth, and other symptoms of the chronic poisoning induced by these dangerous germs which, unfortunately, are always found in great numbers in cow's milk.

Torrey, experimenting with white rats, found that by feeding dextrin the protective germs could be restored within three or four days, the putrefactive germs disappearing almost wholly.

This is a discovery of very great importance and helps to explain the benefits derived from the feeding of barley gruel, malt soup, potato soup, and other preparations containing more or less dextrin. In malt sugar, dextrin is found in greater abundance than in any other food suitable for young children, a fact which in part doubtless explains the great benefits following the substitution of malt sugar for cane sugar in the diet of bottle-fed infants, an observation which has led leading specialists in the care of children to recommend malt sugar as greatly superior to either cane sugar or milk sugar in infant feeding.

The malt sugar should be added to the milk or milk and water mixture in the proportion of one ounce to the pint.

Malt sugar is now obtainable at most drug stores. One of the best preparations is maltose sugar. This is commercially known as maltose, and may be had in either powder or syrup form.

* * *

# MEDICAL PROGRESS

# An Interesting Lecture by an Expert on Nutrition

ABSTRACT BY EMMA FRANCIS, M. S.

Prof. E. B. Hart, of the Experiment Station of the University of Wisconsin, recently gave an intensely interesting lecture at an open meeting of the American Chemical Society, Sectional Meeting, at the Agricultural College, East Lansing, Mich. The subject was "Recent Investigations in Animal Nutrition." Although the work was reported and the pictures thrown on the screen were on and of animals, the lecturer drew many lessons for the enlightenment of the human family. Each time the animals showed the lack of some particular item in their diet, Professor Hart advised his audience what to do about their diet. The talk was no more appreciated by the farmers and the students of the Agricultural course than by the girls of the Home Economics department and the college professors and their wives.

Professor Hart described the condition, and the screen showed the size and appearance, of cows fed from cereal plants. The animals fed from the corn plant, on a ration of corn grain, gluten feed and corn stover, were healthy, vigorous animals. Their calves were normal. The cows fed from the wheat plant ceased to grow after reaching the weight of 1000 pounds, their calves were born before time, were not able to stand, and died in a few days.

The offspring from a mother fed a corn grain and wheat straw diet was shown with curved legs, while the offspring of another cow on the same diet with a mixture of minerals added, was a fine looking calf. Correcting the wheat plant diet by the addition of roughage, such as alfalfa hay, the mother and calf were both sleek and handsome.

A number of slides shown illustrated the fact that roughage played a much more important part in nutrition than has been suspected. Many foods that are used as roughage or bulk contain other substances, especially salts, that may contribute essential constituents to the diet.

But Professor Hart demonstrated with his experiments and slides that filter paper was a most efficient aid to elimination. This is a form of paper pulp that has been made as free from impurities as possible. It is used in the chemical laboratory to separate solids from liquids. Some grades of this paper are ash free; that is, if burned no ashes remain, showing that no minerals are present. The professor showed pictures of two chickens on the same diet, except that one chicken had filter paper added. The latter chicken's feathers were thick and smooth, while the chicken with no filter paper in its diet was ruffled and considerably smaller in size. The filter paper proved more beneficial than even an agar addition to the diet. Can there be any better proof that elimination of the body wastes means health?

Many slides were shown of pigs on diets with and without calcium, with and without butter fat. The mother pig brought forth dead young, if her diet was deficient in calcium. The photographer had laid the eleven dead young, all in a row, in front of the mother pig. These stories of imperfect reproduction were most impressive. They were told with such convincing proof to eye and ear that the most indifferent person in the audience must have been roused to choose his next meal with some care and thought.

The speaker, having seen so many times the necessity for sufficient calcium in the diet, said that "we might possibly put upon our table a calcium as well as a sodium chloride (common salt) shaker."

The story of the vitamins was illustrated with a slide of a pigeon on a polished rice diet. The neck of the pigeon was turned backward, its head lying on its back. A rat fed on the *yellow* cornmeal diet was in excellent condition, the rat on a *white* cornmeal diet had a rough coat and was much smaller in size. The lecturer deplored the habit that Southern people have of using the white variety of corn in preference to the yellow.

The work at the Station showed the presence of the fat-soluble vitamin in foods containing carotin, a yellow pigment. Considering the foods that have been given the biological test (feeding experiments), the yellow pigment seems to be present in those foods that are high in their fat-soluble vitamin content. The list consists of butter, egg yolk, carrots, sweet potatoes, bananas, all having the yellow color. At the Experiment Station, 500 milligrams (one fifty-sixth of an ounce) of yellow crystals have been isolated, one milligram of which would produce growth in a diet otherwise lacking in fat soluble vitamin.

The value of butter substitutes was touched upon. Feeding experiments, in which different samples of butter substitutes were used, varied greatly. One sample of a brand would induce good growth, another sample of the same brand would give fair growth, and still another only a poor growth. Professor Hart's conclusion is that the food of the cow determines the amount of vitamin in the milk or in the fat of her body.

The interest of the audience in the effect on human nutrition of the findings as reported was evidenced in the number of questions asked at the close of the lecture. For twenty-five minutes the speaker answered them as fast as they came. "In what foods is the calcium content high?" "Can the calcium in hard water be utilized?" "Do we need to object if common salt contains other salts than sodium chloride?" etc.

# Sun Baths in Pott's Disease

Caries, or tuberculosis of the spine, is the cause of humpback and other deformities in children. It often exists for a long time without being discovered. It is most frequent in children, but it sometimes occurs in adults. The most valuable remedy thus far discovered is the sun bath, or heliotherapy. Although this measure of treatment has been little used in modern times, until recently, it was well known to the ancients.

According to Decref, a Spanish physician, the excavations at Korbus, "near Tunis, have shown inscriptions dating from 42 B. C. recording the efficacy of sun baths and saline baths in the treatment of vertebral caries. Families are apt to carry to extremes the directions given them, and allow the children to take sun baths even up to four hours in an August noon, but the children in Spain seem to thrive under them and the focus of disease improves in a few months to equal what is realized elsewhere only in a year or two."

The proper length of time for the sun bath should be regulated, according to Decref, by the temperature after exposure, a distinct rise of temperature indicating overheating.

The sun bath is much used in Spain. The benefit derived from sun baths is due to the general vitalizing effect upon the whole body. An application made simply to the affected part is not sufficient. The entire skin must be exposed, or as much as possible, when it is necessary to protect the parts immediately affected by a cast.

"The hemoglobin may play in human beings the same rôle as chlorophyl in plants. The fluorescent pigments, chlorophyl in plants and urobilin in animals, may destroy toxins and microbes to a certain extent under the action of sunlight. The action of the sunlight seems to take place mainly in the superficial circulation.

"Decref extols the Lorenz and Redard frames for vertebral caries as offering the best conditions for immobilization while permitting heliotherapy. He decries the Albee and Hibbs operative measures as illogical, and contraindicated during the early phases. Time will show whether they should not be discarded completely, as complicated, useless or harmful, in all other stages of the disease. They should be reserved for cases with a progressive course in spite of systematic other treatment."—*Journal A. M. A.*

# The Cause of Pellagra

There has been considerable conflict of authorities on the subject of the cause of pellagra. The majority of investigators have attributed the disease to certain errors in diet; others have suggested that the disease is due to an infection.

A recent study of the subject by McCollum, Simonds and Parsons confirms the conclusion of Silier and MacNeil "that pellagra is caused by an infectious agent, and that unless it has been introduced into a district, there may develop such a condition of lowered vitality from faulty diet or other debilitating influences as would predispose one to an attack, without the appearance of the disease. The debilitating effects on animals of diets derived from cereals, tubers, roots, and any food products formed from the milling of grains, together with legume seeds and meats, are so striking that we believe similar diets would produce in man a susceptibility to infectious diseases such as tuberculosis or pellagra. We have come to hold the view . . . .that the predisposing influence for both is in general the same, and that the character of the unsanitary conditions surrounding the individual may determine which of these two diseases he will develop."

The remedy suggested by these investigators is not the free use of meat, as has been recommended by some investigators, but "the regular and liberal use of leafy vegetables, and above all the inclusion in the diet of a suitable amount of milk.

# "On the Researches of Currie and Recent Views Relating to the Remedial Use of Water"

Forty-four years ago Dr. Austin Flint, Professor of Medicine in Bellevue Hospital Medical College, read before the New York Academy of Medicine an interesting paper with the above title. It was later published in the *American Practitioner,* Louisville, Ky. The following brief extracts from this paper will be of interest to many Good Health readers:

"The use of water externally as a means of diminishing preternatural heat of the body has been studied of late, particularly by German physicians. One of the ablest of these, Liebermeister, in his article on typhoid fever in Ziemssen's 'Cyclopedia or the Practice of Medicine,' gives the credit of priority to Currie in these words: 'The first result (the cooling of the body by the energetic withdrawal of its heat) is accomplished by means of what is known as the cold-water treatment, which was first systematized and used in febrile affection according to certain clear indications, by James Currie, during the last decade of the eighteenth century. His method, which consisted chiefly in cold affusions frequently repeated, found many followers, and was especially employed in typhoid fever; but for some reason it gradually fell into disuse, and was finally almost forgotten.' (American Translation Vol. 1, 1874.)

"Liebermeister attributes the revival of the cold-water treatment 'with the proper degree of system and rigor,' to E. Brandin Stettin, who published a work entitled, 'Hydrotherapy of Typhoid Fever' in 1861. He was followed by Jurgensen, who studied the cold-water treatment in the hospital at Kiel, and published a work in which 'the results are set forth in an impartial and strictly scientific manner.' Also Liebermeister has further published an essay on the treatment of fevers, according to the use of cold water. (Sammlung Klinischer Vorträge, No. 31. Leipsig, 1871).

"The advocates of the cold-water treatment at the present time employ it purely for an antipyretic effect; the sole purpose is the withdrawal of heat from the body. Currie evidently did not regard its remedial use exclusively in this light. He considered the sudden and powerful impression produced upon the nervous system as especially important, hence the choice of affusion as the mode of its employment. (Currie has a book entitled, 'Medical Reports on the Effects of Water, Cold and Warm, as a Remedy in Fever and Other Diseases. Whether applied to the Surface of the Body or Used Internally.' Published 1797 and 1808. This is in the New York Library.)

"Currie made no claim to having originated the method of treatment which he studied. He takes pains in the first paragraph of the first chapter of his work to attribute his determination to make trial of the treatment to an article by Dr. William Wright in the *London Medical Journal* for 1786.

"Currie used the treatment first in the Liverpool Infirmary in fever. The treatment was employed in seven cases. All recovered. In the case of fever, if the affusions are applied on the first or second day, the fever does not return. Usually, applied so late as the third day, cure takes place; and on occasion when applied on the fourth, but rarely. However, applied soon after the fourth, while affusions may not effect an instant cure, they usually cause the fever to abate. Currie employed this treatment with success in the following diseases: Smallpox, Convulsive diseases, Hysteria, Furious paroxysmal mania (probably D. T.). Currie did not always employ the cold bath. In some instances he used the tepid bath, when he found the body might thus be more quickly cooled than by a cold one. He also made use of wetting the body with cold or warm vinegar, but considered this less effectual. He says, 'The system will often bear a sudden, a general and a stimulating application of cold, when it shrinks from a slow and successive application.'

"He prepared sea or salt water at a temperature of 40-50° F., poured it over the naked body (using four to five gallons), dried the patient immediately and put him to bed.

"The fever referred to probably embraced both typhus and typhoid. There is reason to think that another fever which he describes was acute pneumonia.

"He also used these affusions in scarlatina. He administered the treatment according to the return of the temperature, sometimes as often as every hour.

"He gave cold water and lemonade to drink. He considered affusion much more efficient than a bath.

"He did not extend his researches to inflammatory affections.

"Currie devoted a chapter of his first volume to 'the internal use of cold water in fever.' He says concerning the refusal of physicians to give cold drinks in fever, 'These learned theorists prevailed in their way over the voice of Nature.'"

# Fat-Soluble Vitamin in Tubers and Roots

In connection with the occurrence of the fat-soluble vitamin in the foods with a yellow pigment, the December number of the *Journal of Biological Chemistry* contains the second paper of the Wisconsin Experiment Station workers on "Fat-Soluble Vitamin." They report that fifteen per cent of yellow sweet potatoes or fifteen per cent of carrots contain sufficient fat-soluble vitamin for the growth and rearing of the young rat. Fifteen to twenty-five per cent of rutabagas, dasheen, red beet, parsnip, white potato, mangel and sugar beet brought about failure in diets in which there was no fat-soluble vitamin. Sixty per cent of sweet potatoes, sixteen per cent of casein and salt mixture produced normal growth and rearing of most of the young. The experiment lasted ten months; the animals were in good condition, although a variation in weight was indicative of digestive disturbances.

Chicks have been raised on carotinoid-free food. Their eggs did not contain carotinoid, and a second generation of chicks were raised from these eggs. The eggs contained a yellow pigment, but unlike that in the normal egg.

Apropos to the question of vitamin in milk from different cows, Dutcher and his co-workers of the University of Minnesota lengthened the time of production of scurvy in their experimental guinea-pigs on an oat and milk diet by feeding milk from a cow fed on grains and green grass. The pigs fed milk from "stall-fed" cows showed the development of scurvy three to five days earlier, and death resulted fifteen to thirty days sooner than in the pigs fed on the "green grass milk."

## Rhubarb Juice *vs.* Orange Juice

A State Agricultural Experiment Station recently announced that rhubarb juice is found to be equal to orange juice as a means of promoting the growth of infants fed on pasteurized or sterilized milk. This is certainly an error. For a short period, and when fed in small quantities, it is quite possible that the use of rhubarb juice might produce no bad effects in the infant, but the long continued use of pieplant will undoubtedly be found to produce harmful effects on account of the large amount of oxalic acid which it contains. Rhubarb is a poisonous plant, and should have no place in human dietaries. Several cases have been reported in which deaths have resulted from the free use of this plant.

## Flies Cause Dysentery

The Medical Research Committee has recently received a report of an outbreak of dysentery in Macedonia which proves conclusively that a fly when experimentally infected with the dysentery germ, is able to carry it a considerable distance and infect culture mediums in which the germs could be afterwards grown. It is also shown that flies in their natural state carry dysentery germs when the disease is pervading their neighborhood.

It is probable that the infection of infantile diarrhea is carried in the same way.

## Yellow Corn Has the Highest Food Value

Recent observations by Steenbock and Boutwell of the University of Wisconsin, indicate clearly that yellow corn is rich in the fat-soluble vitamin which is necessary to promote growth and to prevent the development of eye disease, while white corn contains practically none of this important food constituent. These facts were substantiated by numerous experiments upon rats. Rats fed upon yellow corn grew at the normal rate, while those fed upon white corn, under the same conditions, ceased to grow within a short time. Further experiments made by the same observers show that the fat-soluble vitamin, which is found in yellow corn, is somehow connected with the yellow pigment, carotin, which is found in carrots and in the yellow sweet potato. These vegetables were shown to be practically as rich in the fat-soluble vitamin as is the green leaf, which also contains this yellow pigment, although it is obscured by the green chlorophyl.

This interesting discovery explains the popularity of the sweet potato in the southern part of the United States and in all tropical countries, where it is always preferred to the Irish potato.

## The Bacillus Botulinus

The *Journal of the A. M. A.* sums up the present knowledge of the *Bacillus botulinus,* finding "that it is of more common occurrence in some areas than in others; that it may find its way into canning factories as well as into the family kitchen; that its spores may survive relatively high temperatures to germinate subsequently and produce a potent toxin, and that in spite of the usual warning given by signs of decomposition, contaminated food may be eaten and cause death. Methods of canning on a large and on a small scale should be devised which will kill the spores of *B. botulinus.* Meanwhile we may urge again, as we have heretofore, that canned food showing signs of spoiling should not be eaten. It should also be remembered that the toxin of *B. botulinus* is destroyed by boiling, so that canned foods boiled before they are eaten are rendered materially safer."

## Bananas

Dietary experiments show that while the banana is in many particulars an excellent food, it is lacking in some particulars. For one thing, it is greatly lacking in food lime. With the addition of milk and carrots, bananas prove a satisfactory food.

# PUBLISHER'S LETTER BOX

## The Best Magazine

Mrs. Wm. O'Neal,
*Fremont, Mich.*

"I have been a subscriber to Good Health for ten years. I think it is the best magazine published, for it is all the doctor one needs if he will follow its teachings. I have sent my subscription to you today for renewal. I loan my magazines to my friends and neighbors."

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"Have been a constant subscriber to, and reader of, Good Health since January, 1910, and consider it one of the very best investments I ever made. Expect to take Good Health as long as it lives and I live. If everyone would read and put into practice its teachings, we would soon have a new race of strong, robust men and women."

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"I do enjoy this magazine so much, and feel that it is a great help to my family."

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"I have been a subscriber to Good Health for ten years and consider it the best magazine in its class published. If people would read this magazine and follow the advice it contains, they could save themselves much suffering and incidentally a good many dollars."

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"We think a great deal of Good Health Magazines. My husband takes them to school and places them on the reading table for the students, after which I get them back and keep them on file for our own use."

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H. W. Petrie, Sr.,
*Toronto, Ont.*

"I might just say that I have been a subscriber to Good Health for over 25 years and value it more and more as time goes on."

GOOD HEALTH

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# Plain Living

Plain living is right living. The simple life is the best panacea that can be offered for theworld's ills. A study of history shows that the most vigorous, hardy, aggressive, and virtuous nations, as well as individuals, have been those who lived the nearest in harmony with the simple and natural requirements for human existence; that is, those who made the least use of luxuries and for the most part contented themselves with the essentials. Corruption of manners and physical degeneration naturally follow the gratification of the unnecessary and destructive demands of luxury.

Cornaro says, referring to gourmands: "Besides, these Belly-gods say that an orderly life is so hard a thing that it cannot be kept. To this I answer that *Galen* kept it and held it for the best Physick; so did *Plato* also, and *Isocrates,* and Tully, and many others of the Ancients; and in our own age, *Paul the Third,* and *Cardinal Bembo,* who therefore lived so long; and among our Dukes, *Laudus* and *Donatus* and many others of inferior condition, not only in the city, but also in villages and hamlets."

To the above list of distinguished men whose lives were samples of simple, wholesome living, might be added Socrates, Pythagoras, Seneca, the Greeks under Lycurgus, and a great number of the world's most noted characters.

Thoreau and the Brook Farmers, about the middle of the last century, undertook to revive the idea of the simple life; and at the present time there are probably more persons interested in solving the problems of biologic living than at any previous time in the last millennium of human history.

Simplicity, temperance and conformity to Nature's requirements in one's habits of life, promote health, strength, vigor, longevity and resistance to disease, and thus spare us multitudinous miseries and maladies, promote efficiency, mental poise, and afford the best health insurance.

Physical soundness, through simple living, is the fundamental and essential condition for preparedness. The man who is sound in body, free from distracting pains or other physical worries, untrammeled by mental dullness or depression, is ready to meet life's emergencies with equanimity and to surmount them triumphantly. If misfortune comes, as the result of circumstances beyond his control, he is able to adapt himself to the new conditions in which he may find himself, for the reason that his life, his happiness, do not rest upon the frail, though material, foundation of grand houses, fine clothes, and luxurious table, or riches of any sort which easily take wings and fly away, but upon the unhandicapped ability to feel, to sense, to appreciate, to enter into and enjoy to the full, the physical, moral, and intellectual experiences of life.

Biologic living is simply living in harmony with the power that dominates the universe. The same forces that are working in gravitation, in the growth of trees, in the lightning, in the storm, in the tidal wave, in the hurricane, and in all the great processes of Nature are at work within us.

When one indulges himself in the gratification of perverted appetites and the satisfaction of artificial wants, he is at war with his Maker; he is setting up a puny opposition to the mighty forces which rule the universe, and which, through the operation of that inexorable law, "Whatsoever a man soweth, that shall he also reap," will inevitably sweep away with the besom of destruction.

# Discoveries about Mastication

Probably many people imagine that Horace Fletcher was the first apostle of thorough mastication. Mr. Fletcher himself was certainly of this opinion and was so thoroughly convinced of his right to the honor of the great discovery that at his request GOOD HEALTH undertook to launch the word "fletcherizing" by writing an article with "Fletcherizing" as the heading. This was the first time the word ever appeared in print. The article was prompted by a remark by Mr. Fletcher to the writer that he would feel amply paid for his efforts to promote a chewing reform if his name might be immortalized by being grafted into the English language. But the fine art of mastication really had a much more ancient origin.

To Spallanzani, a man of science who flourished in the eighteenth century (1729-1799), belongs the credit of having been the first to demonstrate the importance of thorough chewing of the food. In his great work on "Digestion" (Vol. 1, p. 277) Spallanzani gives an account of experiments which demonstrates the importance of thoroughly chewing the food. Spallanzani was the first to study experimentally the properties of the gastric juice. He made small hollow spheres with perforated sides. Into these he introduced foodstuffs of various sorts, then swallowed the spheres and after they had passed through the body, examined the contents, noting the changes which had been wrought by digestion. By this ingenious method, he also studied the effects of mastication.

We quote his own account of his experiments and his conclusions therefrom as follows:

"I took two pieces of Mutton, each weighing 45 grains, and having *chewed* one as much as I used to chew my food—enclosed them in two separate spheres—and swallowed them at the same time—these tubes were voided at the same time—of the masticated meat there remained only 4 grains—of the other there were 18 left."

"The necessity of *Mastication* is sufficiently known—there is perhaps no person who has not, some time or other, suffered from Indigestion, for want of having chewed his food properly. The reason is obvious. Not to mention the saliva which moistens the food, and predisposes it to be dissolved, it cannot be doubted that, when it is reduced to pieces by the action of the Teeth, the gastric fluid penetrates, and attacking it at more points, dissolves it more speedily than when it was whole. This is true of menstrua in general, which always dissolves bodies sooner when they have been previously broken to pieces. This is also the reason why, in other experiments, masticated bread and *dressed* flesh were more readily dissolved than unchewed bread and *raw* flesh. The boiling had made it tenderer, and consequently disposed it to allow ingress to the gastric fluid."

Three-quarters of a century later, William Kitchener, author of "The Art of Invigorating and Prolonging Life," quoting the famous Dr. Arbuthnot, tells us that "Mastication is a very necessary Preparation of solid Aliment, without which there can be no good Digestion," and adds,

"To Chew long, and leisurely, is the only way to extract the essence of our food—to enjoy the taste of it, and tō render it easily convertible into laudable Chyle, by the facility it gives to the gastric juices to dissolve it without trouble.

"The pleasure of the *Palate,* and the health of the *Stomach,* are equally promoted by this salutary habit, which all should be taught to acquire in their infancy.

"From 30 to 40 (according to the tenderness of the meat) has been calculated as the mean number of Munches, that solid meat requires, to prepare it for its journey down *the Red Lane*; less will be sufficient for tender, delicate, and easily digestible white meats."

Finke, in his *Medical Geography,* published more than a hundred years ago, tells us that,

"Slave dealers are well acquainted with the characteristic signs of perfect Health—any defect of which much diminishes the value of a Slave. The want of a *Tooth* makes a slave worth two Dollars less."

Again says Kitchener,

"*Mastication* is the source of all good Digestion;—*with its assistance,* almost any thing may be put into any stomach with impunity:—*without it,* Digestion is always difficult, and often impossible: and be it always remembered, it is not merely what we eat, but what we digest well, that nourishes us."

It is thus very evident that the importance of thorough mastication of the food is by no means a new or modern discovery, but is simply the recovery of a much neglected truth the value of which was fully appreciated by our remote ancestors as well as all other members of the animal kingdom.

# The Death of Rear Admiral Peary

The recent announcement by the papers of the death of Admiral Peary from pernicious anemia was doubtless a shock to many of those who were acquainted with the Admiral, as well as to the thousands who have known of him as a man possessed of extraordinary physical vigor and endurance.

Admiral Peary was a man of Herculean frame, a giant in stature, symmetrically built, possessed of huge muscles, and having in every way the appearance of prodigious strength and vitality. Admiral Peary was not only naturally strong but was a thoroughly trained athlete; for conceiving at an early age the idea of making a conquest of the polar region, he set about systematically preparing himself for the task by athletic training and by inuring himself to physical hardships of every description.

It is indeed astonishing that a man with such a marvelous capital of strength should be laid low by a disease the chief feature of which is degeneration or destruction of the blood. A friend who was quite intimately acquainted with Peary, informed us several years ago that he was a very heavy feeder and consumed great quantities of meat. Many years ago Von Noorden and other distinguished authorities in medicine called attention to the fact that pernicious anemia is a disease from which purely herbivorous animals do not suffer, but which is common in meat-eating animals. As many as a dozen years ago, when the writer was in Berlin, one of the great clinical teachers of that city was instructing his students in his public lectures in the virtues of vegetarianism as a cure for pernicious anemia. The late Dr. Herter, one of the foremost bacteriologists of this country, made a special study of the relation of diet to pernicious anemia. He showed that the stools of a person living on a mixed diet are highly poisonous. A filtered solution of such fecal matters injected into a guinea pig produced speedy death, whereas death was not produced by a similar solution prepared from the feces of an herbivorous animal. It was also found that blood placed in a culture of germs obtained from the stool of a person living on a mixed diet was quickly dissolved, demonstrating that the germs which grow in the stools of meat eaters produce poisons which are capable of dissolving the blood. He also showed that germs of this sort are present in great quantities in the stools of persons suffering from pernicious anemia. These blood-destroying germs are found in great numbers in butcher's meat. They are always present, and through the eating of meat they are introduced into the colon, where they thrive, finding abundant material for food in the residues of undigested meat which they find there. It would thus seem to be no marvel that meat eaters are subject to pernicious anemia. The wonder rather seems to be that all meat eaters do not suffer from this formidable disease.

Peary, although provided by Nature with a constitution which ought to have carried him safely to one hundred years, died when only past middle age, when he should have been at the very zenith of his vigor, made prematurely old perhaps by the hardships endured in his marvelously persevering and finally successful search for the pole; and one of the greatest of these hardships, perhaps the one which inflicted the greatest injury upon him, although probably not appreciated by him as such, was the exclusive diet of meat upon which he was sometimes obliged to subsist for considerable periods of time.

Another great national figure who passed to the beyond only a few months ago, in the writer's opinion, probably owed his premature demise to the physical deterioration which is the natural result of a high protein diet and consequent overwork of liver, kidneys and other essential vital organs.

# Diet and Influenza

There can be no doubt that susceptibility to infection and ability to resist and to survive serious attacks of disease are largely influenced by diet.

Lauder Brunton, the eminent English physician, many years ago called attention to the fact that the rice-eating natives in India were much more likely to recover from severe surgical operations than the beef-fed Englishmen.

Paget, the eminent surgeon, called attention to the fact that patients coming from the city were much more likely to die after severe surgical operations than patients from the country, a fact which he attributed to the larger consumption of meat by city dwellers.

*The Texas Medical Journal* in a recent issue, June, 1919, states that "the dwellers in Barrio Borinquen, an outlying district of Aguadilla, have discovered an effective remedy for influenza. Treating it as a simple grip attack, they take orange juice and live on a vegetable diet. As a result, out of 300 cases there has been but one fatality, and that was a case where poverty and abandonment played a principal part."

To the above we may add the experience of the Battle Creek Sanitarium during the severe epidemic of 1918. Only some 25 cases occurred among the members of the great family of patients, numbering seven or eight hundred persons. Not a single one of these proved fatal. Of some two hundred cases occurring among the people of the town and treated by the Sanitarium methods, which included a strict non-flesh dietary, no deaths occurred.

# Peanut Butter

A correspondent asks us to tell Good Health readers about the origin of peanut butter.

Peanut butter was introduced to the world through Good Health. The first article ever written upon the subject was written by the editor of Good Health, under whose supervision the first peanut butter was made. The nuts, after careful preparation, were roasted in the ordinary peanut roaster, then ground into a paste, and named "peanut butter." This was nearly thirty years ago.

The purpose of preparing peanut butter was to present the nuts to the digestive organs in a form easy of digestion. European physiologists had shown by experiment that when eaten in the ordinary way a large part of the peanut passes through the alimentary canal without digestion, and hence without being utilized. It was found by actual experiment that a peanut particle not larger than the head of a pin wholly escaped digestion, only such portions of the nuts being digested as were reduced by chewing to a smooth paste, forming a creamy emulsion with the saliva and other liquids.

The use of peanut butter was for some time confined to the Battle Creek Sanitarium, but it gradually became known to the public, and a little later its manufacture rapidly developed to the proportions of a great industry. In the meantime, the discovery was made at the Sanitarium that the process of roasting rendered the nuts somewhat indigestible on account of the high temperoture to which they were exposed. When highly heated, fats are decomposed, and these burnt fats are highly irritating and greatly disturb the digestive organs. Accordingly, peanut butter, though at first very popular, fell under the taboo of the Sanitarium physicians, and practically disappeared from the dining-tables.

After extended experiments, a method was found for making a palatable nut butter without roasting the nuts, thus avoiding the disadvantages which are adherent in roasting nuts because of the irritating effects of burnt fats.

Persons whose stomachs make too much gastric acid are particularly liable to suffer inconvenience from eating ordinary roasted peanut butter, because the burnt fats excite the gastric glands and cause them to produce a still greater excess of acid.

# The Tobacco Business Trying to Reform

The *Tobacco Leaf,* a weekly devoted to the tobacco business, publishes a leading editorial in its issue for Feb. 12th, in which a most earnest appeal is made to tobacco users to "reform," though not by discarding the use of tobacco, but *by paying more regard to the feelings of nonsmokers.*

The occasion for this appeal was the announcement from St. Louis that the cigar dealers of that city are trying to compel their transit companies to supply smoking cars or seats for tobacco users. The *Tobacco Leaf* doesn't favor this method, evidently recognizing the fact that tobacco users have already gone much too far in trampling roughly upon the rights and sensibilities or non-smokers, and so the editor says:

"We are impelled to approach with extreme caution the subject of forcing the privilege of smoking in public places where smokers and non-smokers intermingle and where the use of tobacco is likely to be offensive to a great many people.

"Members of this industry will do well to regard tobacco as being on trial before the tribunal of public opinion.

"In every State and in every city there are self-appointed anti-'detectives' and 'lawyers' seeking to accumulate evidence by which they may convict tobacco of being a public nuisance and a menace to the health and happiness of a majority of the people.

"It should be the business of the tobacco trade to make such evidence unobtainable and to keep the record and reputation of tobacco so clean and straight as to make acquittal absolute at all times.

"Smokers and the tobacco trade must never overlook the unquestioned fact that tobacco smoke is offensive to a great many people.

"The majority of such people have absolutely no quarrel with tobacco, but they are likely to become righteously indignant when compelled to inhale its fumes in inappropriate places and under circumstances that make the smoker appear selfish, inconsiderate and offensive.

"There are places and times at which smoking is offensive even to tobacco users.

"The surest safeguard against anti-tobacco propaganda and legislation is to encourage smoking only under circumstances and conditions that will render it at least passively agreeable to people generally and the public at large.

"Every time a truant breeze lodges a bit of cigar ash in the eye of a non-smoker, a recruit is made for the army of the antis.

"Every time a whiff of smoke irritates the super-sensitive olfactory nerve of a non-user, the antis gain a supporter.

"Every time a burnt match or a cold cigarette butt is dropped on the newly swept carpet of the painstaking housewife the enemies of tobacco are increased by one.

"There are many people who do not like it and do not use it.

"It should be the particular business of members of the tobacco trade to see that the preferences of these people are shown every deference and consideration.

"The best friend of tobacco is he who jealously and zealously guards every loophole through which defamatory arguments seek admission to public support and popular favor.

"The worst enemy of tobacco is he who, having no sense of the fitness of things, uses tobacco carelessly and without due regard for the convenience and comfort of his fellow creatures."

This is good news. Evidently the wise heads of the tobacco business are beginning to recognize the fact that their business and their pet vice are in danger. After having trampled upon the sensibilities and the rights of the majority of the members of every civilized community for years, they are now willing to concede that the non-smoker has some rights which they are bound to respect—not, however, because of any innate sense of right or justice, honor, or propriety, but because they are afraid that a continuance of the insolent and belligerently offensive manner in which they have heretofore indulged their dope habit will result in increasing the number of enemies which they now see rising on every hand.

The *Tobacco Leaf* in alarm tells its readers that "anti-tobacco detectives and lawyers are seeking to accumulate evidence by which they may convict tobacco of being a public nuisance and a menace to the health and happiness of the majority of the people." The *Tobacco Leaf* is mistaken upon this point. There is no necessity for accumulating evidence that tobacco is a public nuisance. Such evidence has been accumulating for the last four hundred years. The insolence and sordid indifference of smokers to the sensibilities of those with whom they associate in public places has steadily grown, especially in recent years, until an attempt was seriously undertaken by the nicotine mongers of St. Louis to compel the transit companies of the city to supply special accommodations for smokers.

A recent report tells us that the cigar dealers succeeded in their attempt to induce the aldermen to permit smoking in the last three seats in street cars "when the weather will permit the windows being open." The street car companies have made a brave fight to respect the rights of citizens.

The people of St. Louis are to be pitied if they have a Board of Aldermen so smoke-befuddled that they are willing to inflict such a hardship upon the women and children of the non-smoking part of their community at the dictation of the tobacconist. But, as the *Tobacco Leaf* foresees, this is perhaps the best way to awaken the too tolerant non-smokers of the country from their supineness and indifference. The majority of the people of the United States are not yet smokers, although the tobacco companies would fain lead every man, woman and child in the country to bow down and worship at the shrine of "My Lady Nicotine."

The fate of John Barleycorn is a warning, the significance of which appeared in a recent number of the *Tobacco Leaf*, entitled "They'll Get Us Yet." A trembling smoker says to the editor, "I want to compliment you on your energy in trying to rouse the cigar industry from its lethargy, and to see the danger of the anti-tobacco propaganda with which the country is being flooded."

The same writer adds: "I am a natural born optimist, but I cannot refrain from predicting that *if something strenuous is not quickly done in defense of tobacco, it will only be a few years before tobacco will go the same way liquor has been eliminated.*"

The writer's prediction will doubtless come true, though we are not so optimistic as to think this happy day will arrive in a few years. Considerable time will be required to educate the intelligent people of the United States to an appreciation of the terrible evils, including the enormous waste of human life, for which tobacco is responsible. Unfortunately, it is as hard to rouse non-smokers of tobacco from their apathy and hopelessness in relation to the getting rid of this nuisance as it is for the *Tobacco Leaf* to rouse tobacco users from the lethargy which is the natural result of the narcotic poisons in which they indulge. But the time will certainly come at no far distant day when tobacco will follow John Barleycorn to the discredited oblivion to which it belongs.

# The Oysters Can't Stand It

George D. Pratt, State Conservation Commissioner of New York, calls attention to the fact that the water flowing over the oyster beds where oysters spawn, has become so polluted that the oysters are poisoned by it and are rapidly dying off. Within a few weeks the production has diminished nearly 30 per cent, and the whole oyster industry is threatened with extinction.

The oyster is a scavenger, and is so accustomed to filth that it can dine on typhoid fever germs and other bacteria without inconvenience, and always carries around in its stomach a big assortment of germs capable of destroying human life;

but the filth in New York waters is becoming so concentrated that it is too much even for an oyster, and the poor mollusks are dying a natural death instead of being swallowed alive and kicking on the half-shell.

Probably the oyster doesn't spend much time meditating upon the manner in which it is likely to end its life, but it could hardly be doubted that even this brainless bivalve must prefer to die in a natural way rather than to be strangled in the biting, corroding gastric juice of a biped's stomach.

# Looking After the School Children

Nothing could be more short-sighted and absurd than our present method of conducting the public schools. The Yuma Indians for a long time resisted the effort to educate their children, for the reason that they observed that those of their children who went to school suffered from catarrh and water brash. The commission of Indian chiefs who visited Washington to negotiate a treaty with the Federal government during Franklin's time, declined the invitation to select ten of their young men to receive a college education, declaring that those who tried the experiment returned to their tribe so feeble and ignorant as to be useless and helpless, and added, "Send us ten of your boys and we will make men of them."

The public school is an incubator of disease. School life has always been conducted in such a way as to give to its victims the characteristics referred to by Shakespeare, as "sicklied o'er with a pale cast of thought."

According to the *Journal of the American Medical Association:* "Under the direction of Dr. E. V. McCollum of the Johns Hopkins School of Hygiene and Public Health, a campaign for healthier school children has begun in Baltimore. Three women skilled in child betterment work in the public schools of other cities began the work of weighing and measuring 10,000 children in seven Baltimore public schools. The effect on them of a special program of eating, sleeping and care of the body will be noted, and they and their personal records of gain in weight and general health will be pointed to as evidences of what science can do for a whole community. It will also demonstrate the value of the School of Hygiene and Public Health, of which Dr. William H. Welch, Baltimore, is president. The results will then be published for the benefit of the rest of the 80,000 school children of the city. The actual business of improving the condition of the children will not begin for a month, as it will take at least that long to weigh and measure the entire 10,000 and record the figures on individual charts. It is planned to continue this work for one year, and Dr. McCollum hopes to demonstrate that the supervision of the instruction of all school children in food values will be of advantage to the city."

J. H. Kellogg

# Nuts and Nut Growing

WILLARD G. BIXBY
Treasurer Northern Nut Growers' Association, Baldwin, Nassau Co., N. Y.

Nuts were, in all probability, among the earliest staple foods of man. This original use of nuts, however, has been so completely forgotten that, in this country, the use of nuts is almost wholly as a luxury, and they are eaten after a Thanksgiving or Christmas dinner when enough food and usually more than enough, has already been eaten. It is, however, just beginning to be realized that such a use is a mistaken one and that nuts are a most concentrated food. The starchy ones, chief among which is the chestnut, will replace cereals, and the oily ones, which include most other nuts, will replace meat. Their food value is so high that, even at the high prices which must be paid for nuts, they are really cheaper food than meat when cost per unit of food value is considered. Now that it is becoming known that every family which has room for a few nut trees can grow a considerable portion of the most expensive food required by the family, with almost no labor, it is not to be wondered at that there is a marked interest in nut growing, and that the mail of the Northern Nut Growers' Association is filled with requests for information about it.

While the above paragraph accurately describes the use usually made of nuts throughout the United States, the Battle Creek Sanitarium, years ago, realized the value of nuts for filling the place in the diet for which meat is commonly considered necessary; and it would be difficult, if not impossible, to find a city or a village where the proper use of nuts as food is as well understood as it is in the city of Battle Creek and especially in the Battle Creek Sanitarium.

Nut-growing was considered of such importance in 1896 that the U. S. Dept. of Agriculture published a bulletin on the subject, and the late Andrew S. Fuller was so impressed with the idea that, over twenty years ago, he published his "Nut Culturist," a book far in advance of its time and which was written at a time when much of the direct positive information needed by the one who wished to grow nuts did not exist. While it is a fact that this knowledge does not exist today as it will twenty years hence, nevertheless, it is now sufficient so that the person who wants to grow nuts can do so, if he goes about it in the right way.

A brief resumé of what has been done, and which has changed the situation from what it was in Fuller's day, will be of interest. The first step in advancing nut culture was in finding out the best nuts already growing. The bulletin published by the U. S. Dept. of Agriculture, 1896, mentioned above, gives a list of the best nuts known at the time, and Fuller's "Nut Culturist" also gives a list of those with which he was acquainted. There are few varieties of Northern nuts mentioned in either of those publications which, today, are being propagated. Dr. Robert T. Morris, the first president of the Northern Nut Growers' Association, about 1906, before the founding of the Association, set out to discover the best hickory nuts growing in the country, and kept up the work for several years. Some of the nuts which he found are among the best we have. This work has been continued by the Association, and has been extended to include all nuts which will grow in Northeastern United States; and, as a result, fine varieties of all the native nuts of this section have been discovered, and are being propagated, at least experimentally, and it is possible to obtain from nurserymen grafted or budded trees of most of these fine varieties.

The second step was to work out methods of propagation so that after a fine nut tree had been discovered it could be multiplied to as great an extent as desired. The propagation of fruit trees by grafting or budding with scions or buds from a tree bearing fine fruit has been a well-known process for hundreds of years, but, until recently, it has been impossible to graft nut trees successfully, and especially to graft the hickory successfully. Mr. Fuller in his "Nut Culturist" relates at some length Mr. Hales' attempt to get the hickory which bears his name propagated, and how it took over ten years and thousands of attempts before two dozen trees were grafted successfully. These trees were grafted in the greenhouse on stocks especially grown for the purpose. They have not grown and borne very satisfactorily, and the methods by which they were propagated have been practically discontinued. It was over ten years longer before it was possible successfully to graft a hickory growing out of doors. At the present time, however, grafting methods for nut trees have been so well worked out that the hickories, by common consent considered the most difficult of nut trees to propagate, are propagated with certainty.

The next step was to induce nurserymen to raise the various species of nut trees, grafted or budded to the improved varieties which have been found, so that those who wish to grow nut trees, need not wait several years from the time they decide they want to plant nut trees until they are able to do it. The difficulties of doing this, the amount of time required and the losses and consequent expense attending this growing grafted and budded nut trees are not generally known. In the first place nut tree seed is expensive, and often the proper seed is difficult to get. It is not a waste product, as is the seed of fruit trees, but usually has a high commercial value. Often also it is necessary for the nut tree planter to go himself and gather the seed he needs. It must be gathered at a certain definite time, or the boys and squirrels will get it; and this time frequently cannot be ascertained exactly without a visit to the trees which bear the nuts. This sometimes means two or three trips, which makes such seed cost more even than a high priced commercial product. It takes about six years, with good care, from the time a shagbark hickory nut is planted till the tree is ready to graft, and then several months or a year must elapse before the tree is ready to be sent out. While this is about the slowest tree to propagate, all grafted or budded nut trees take a relatively long time to grow and get ready to plant, compared with fruit trees, and the percentage of successful grafts is much less. All this necessarily makes grafted or budded nut trees expensive, but nut trees grow so large, and so few should be planted on a given space of ground that, even though they are expensive, the cost of nut trees for planting is insignificant.

Now that we have discovered fine nut trees, can propagate them, and the trees so propagated can be purchased, we come to the question as to which of them can be profitably grown in a given location. In a section where nut trees of any species are native, and grow and bear well, it is evident that improved varieties of these species offer the most promise; but there are many sections where various nut trees are not native, and yet where they will grow and thrive. This is well illustrated in the case of the Persian walnut, almond, and filbert orchards of the Pacific coast, where these nuts are being raised profitably thousands of miles away from their native habitat. The same is true of the great pecan orchards of Georgia, most of which are hundreds of miles away from the native habitat of the pecan. The question as to whether a given nut tree can be profitably grown in a given section depends, of course, on its soil and climatic

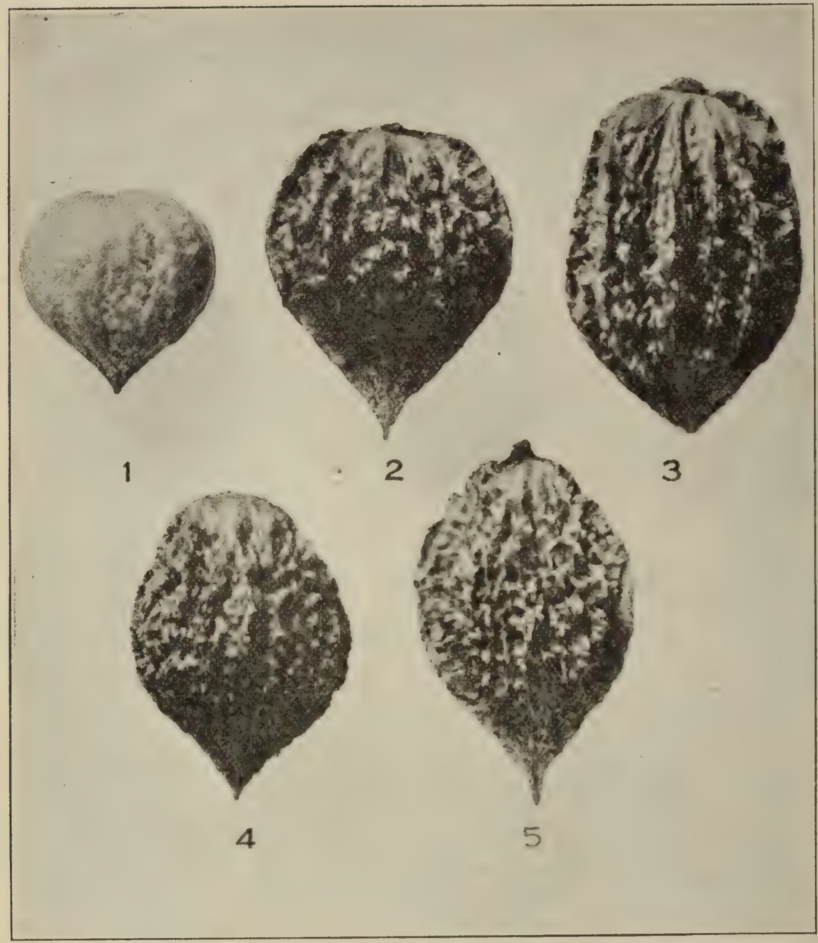


Plate 3—Lancaster Heart Nut and Seedlings

requirements, and whether these already exist there or not; if not, whether it can be readily supplied and not on whether it ever grew in that section before. Much information on the question as to what nut trees can be grown in a section may be learned from a knowledge of the trees, other than nut trees, that are native in that section and the various crops that can be grown there. From this information, one familiar with the requirements of the various nut trees can tell what nut trees are likely to succeed, so that one can make experimental plantings at least, with reasonable certainty of success. In view of the fact that our knowledge of nut growing in the North is in its infancy, it is recommended that only experimental plantings be made in sections where we have no positive knowledge of how the nut trees in question will succeed. The behavior of these experimental plantings for a few years will frequently tell enough so that commercial plantings may be made with confidence. There are a number of sections where our knowledge already is sufficient so that plantings of reasonable size may be made with considerable confidence. For example, through southern Indiana, southern Illinois, and northern Kentucky, where the Northern pecan is native and usually bears well, pecan plantings may be made with confidence. The same may be said in regard to black walnut planting, of those sections where the black walnut is native and bears well, and of those sections where various nuts, not native, have been grown long enough so that the success of plantings of such nuts in those sections is practically certain.

The treasurer of the Northern Nut Growers' Association will be pleased to help any one into whose hands this article may fall in deciding what nuts it is advisable to attempt to grow.

After it has been decided what to plant, getting the trees and planting them needs attention. The Association does not recommend planting seedling trees, and a person is largely wasting his time if he does so. Nut trees will not come true from seed, and one who plants the finest nuts of any species is practically certain to get trees that will bear inferior nuts. This is strikingly illustrated by some examples. Plate 1 shows a Weiker hickory nut (Fig. 1) and the nuts borne by six seedling trees which grew from planting Weiker nuts. Plate 2 shows a Japan walnut, Juglans sieboldiana, (Fig. 1) and nuts borne by two seedling trees which grew from planting the nuts shown in Fig. 1. Plate 3 shows a Japan walnut, Juglans cordiformis, (Fig. 1) and the nuts borne by four seedling trees. While only differences in shape can be shown by cuts, there are equal differences in the flavor of kernel, cracking quality, and in all characteristics; and nuts borne by seedling trees will, in all probability, be as inferior in flavor of kernel, cracking quality, etc., to the fine nuts that are planted as the ones shown in the cuts are in shape. It is also quite possible that the seedling trees raised may not bear any nuts or so few as to amount to practically the same thing, until they get to be old trees. It is a well-known fact that about 60% of seedling pecan trees bear practically no nuts till they get to be quite old, while grafted pecan trees bear young.

The only way to grow fine nuts, and especially to do it quickly, is to plant grafted or budded trees or to top work existing trees. Compared to the price of fruit trees, grafted or budded nut trees are expensive, but they grow so large that they should not be planted close together. Fifty feet apart each way for Persian walnuts, hickories, butternuts and Japan walnuts, and sixty feet apart each way for black walnuts and pecans is the very clos-

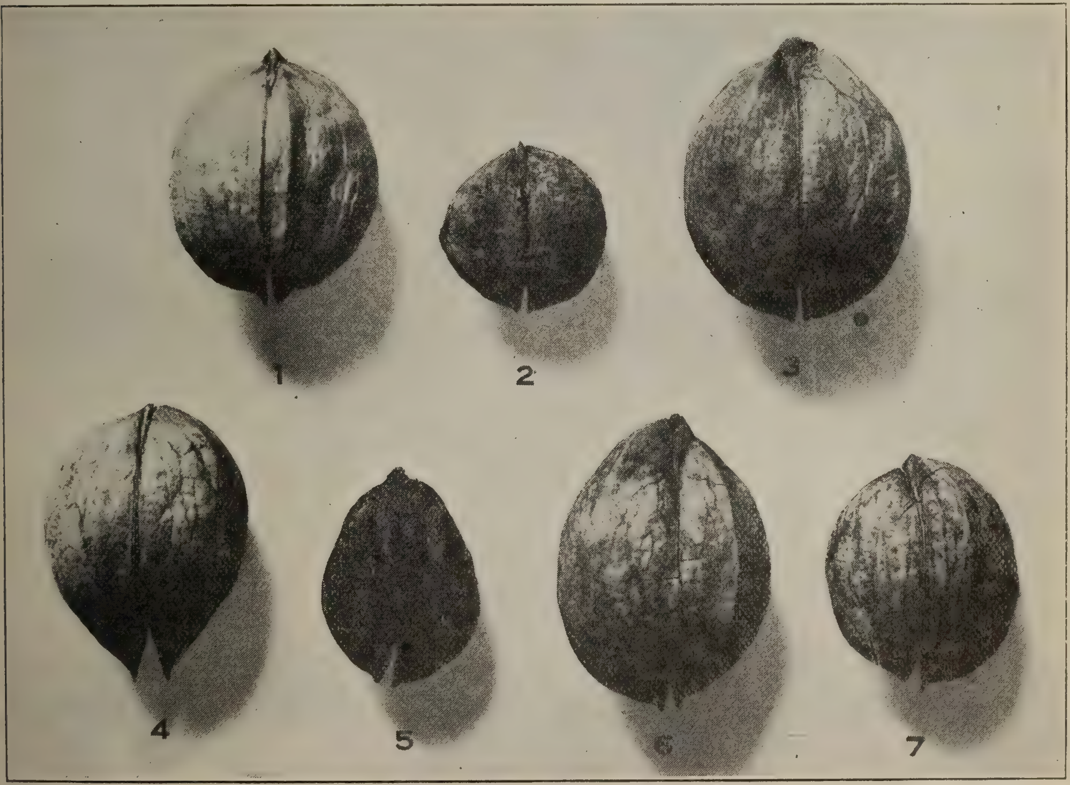


Plate 1—Weiker Hickory and Seedlings

est they should be planted when set in solid blocks. The earlier plantings of pecans in the South were much closer than this, and it has been found that they were too close for best results. Some later plantings are further apart than the figures above mentioned, 100 feet each way in some recent ones, and there is no reason why wide planting is not likely to prove equally advantageous in the North. Under such conditions, the land between is available for raising crops for a number of years.

Nut trees are admittedly among the most difficult of trees to transplant and get established, and it is important that they be handled and planted carefully to get the best results; yet, with good trees to start with, and with proper care and watching, the loss in planting should be small. After the trees have been properly planted they need watchful care until they have become established. In return, however, for all the care and trouble that must be taken from the time the nuts are planted from which grow the seedling trees, which are afterward grafted or budded to fine varieties, and from the time these grafted or budded trees are set out till they become established, and grow to become large enough to bear, those who persevere are repaid over and over again, and their heirs and descendants frequently reap far greater rewards than do the planters.

Nut growing in the North is so new a branch of agriculture that no figures can be given as to what yields may be expected. The same was true of pecan growing in the South twenty-five years ago. Those who have looked into the matter believe nut-growing in the North has as good prospects of success as pecan-growing had twenty-five years ago, although much work has still to be done in getting fine varieties and learning the ones that are best for various sections, working out other cultural details, etc. In those places where nut-growing has become an established industry, the yield, in the value of its products, of land with bearing nut trees on it is usually more valuable than that of the best farm land, frequently very much more valuable; and this comes about with almost no labor being expended. The story is told about an old colored man in Louisiana who worked very hard to support his family, and while he raised cotton and corn he managed to be a fairly good provider. Now he is all crippled up with rheumatism and cannot do much, but he makes more than he ever did. How? A good many years ago, in a time of foolishness, as it seemed to his neighbors, he set some of his good old cotton land with pecan trees. These trees are now working when he cannot.

Plate 2—Siebold Walnut and Seedlings

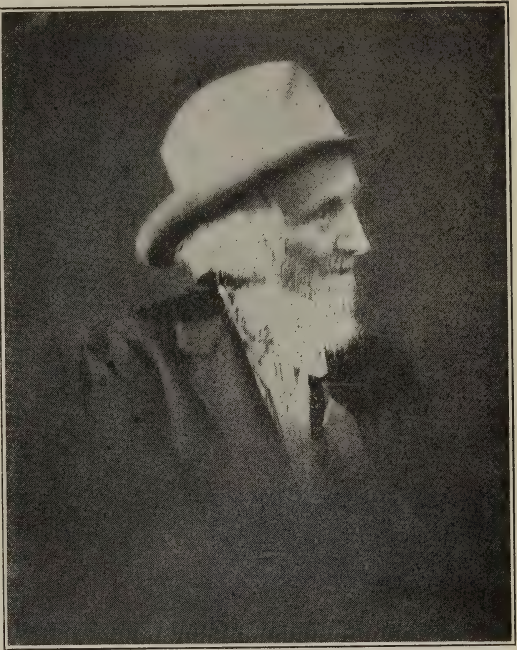
# The Oldest Man

John Shell, now living at Greasy Creek, Leslie County, Ky., at the age of 131 years, is probably the oldest inhabitant of the United States and perhaps of the world. He never used tobacco.

The Editor of Good Health, noting the recent accounts of Mr. Shell which have appeared in various newspapers, wrote to the secretary of the Board of Commerce of Lexington, Ky., asking for reliable information with reference to this reputed super-centenarian, and received the following reply, which will be of special interest to Good Health readers, notwithstanding the fact that Mr. Shell has been almost all his life a user of alcohol, though not of tobacco—a fact which would seem to suggest that tobacco has a worse influence upon longevity than has alcohol:

"Replying to yours of December 8th, beg to advise John Shell, of Greasy Creek, Leslie County, Ky. (P. O. Chappell, Ky.) is 131 years old, according to the dates of the tax receipts which have been investigated and most of which, in consecutive order, are in his possession.

"All the leading newspapers of the country have published various accounts of 'Uncle John.' The *Literary Digest* of November 1st, under the caption 'Hard Times Helped Him to live 131 Years,' gives the most accurate information about the old man, with the exception of the statement, quoted from the New York *Tribune,* to the effect that he has his third set of teeth. 'Uncle John' is absolutely truthful, sincere and conscientious, and personally asked the writer to deny the story about his third set of teeth, which has been published broadcast throughout the United States.



"The speech (his first and only one) before this organization, quoted on page 54 of the *Literary Digest* issue mentioned, is true verbatim.

"Several substantial citizens of Leslie county have made affidavit to having seen the poll tax receipts in his possession, which date back to 1809, which would make him 131 years old. Mr. Shell is not in the least pretentious, and is less excited than any one else over the fact that he is 131 years old. His mind and memory are remarkably bright. I spent hours with him when he was brought to Lexington to attend the Blue Grass Fair, and heard people ask him thousands of questions. He answered every one to the best of his ability and, putting all of his answers together, a connected story back to the time of George Washington was told. It is not unusual to find a remarkable mind and memory in people of the Eastern Kentucky mountains,

Ready for the Flight

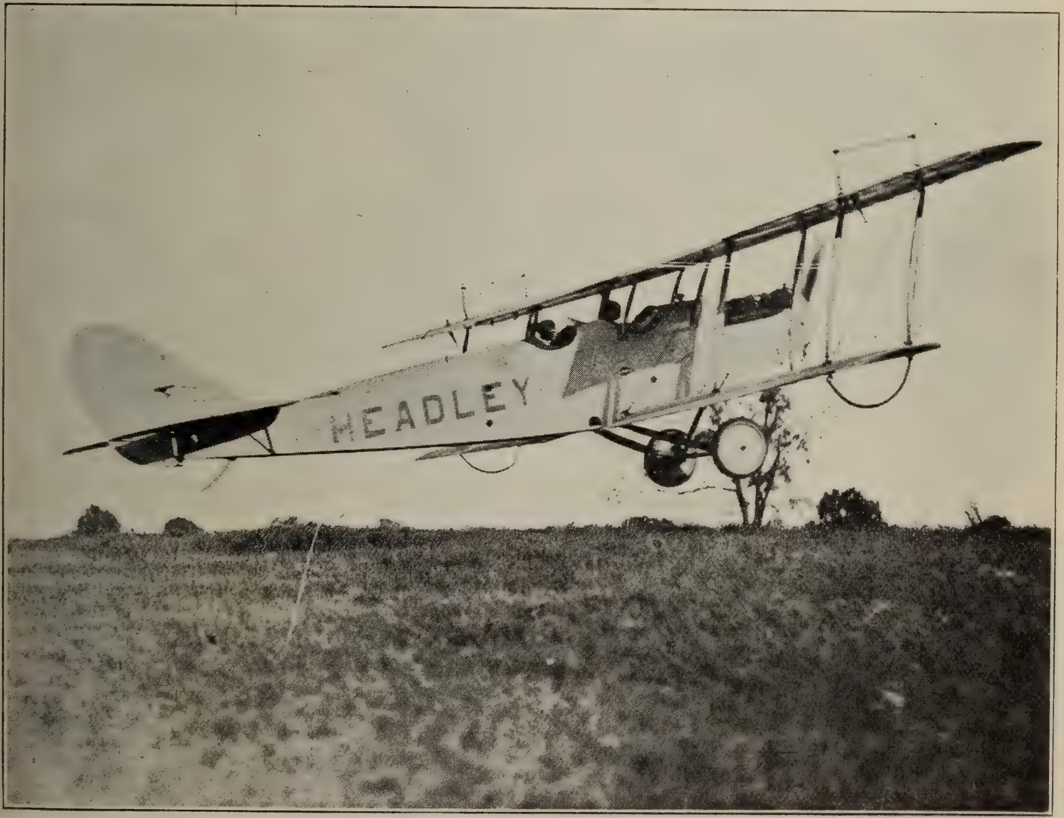
who, like 'Uncle John,' can neither read nor write and have to depend upon memory.

"It may interest you to know that he has a good digestive apparatus. He says people nowadays do not 'rough it' enough. He says that he has 'laid out under a tree many a night' when coon hunting and was covered with snow before morning. He was never drunk but once, and described the occasion to me and others about as follows: 'They wuz a log-rollin' party and they had a big open-air dance. Every once in a while the dancers would go down to the spring and take a drink of liquor. My brother and I watched them, and we decided to slip down and try a cup of the stuff they wuz a-drinkin'. I don't know how much we drank, but when it cum time to go to the table, my brother couldn't eat nuthin'. He wuz sick. I started to eat, but had to leave the table. That night I tuk awful sick in the night, and the next day my sisters made fun of me. They kep' it up for two or three days until I says: "'S'i, lookee here now, I won't have no more of this making fun of me. I ain't never goin' to git drunk again as long as I live," and I never have. I drink two or three drinks of whisky every day and always have, but I never git drunk.' And the writer knows from personal observation that the old man does take his liquor ('slightly damaged by water') two or three times a day, and will not take any more under any circumstances.

"While here his favorite meal was bacon and eggs, corn bread, potatoes and coffee. He eats potatoes French fried or any style, which is better than the writer can do. He eats heartily, and if he ever has indigestion I haven't heard of it. His friends who accompanied him on the trip said that he had never had indigestion; but they were careful not to have everything served to him, as they did not want to take any chances on the long trip to Lexington and later to Louisville, to attend the State Fair. By the way, he went up in an airplane while at the State Fair. The writer was there just after he came down. The newspaper took several photographs of the performance, and the *Courier-Journal* had pictures of him donning the aero-clothes, the start and the return of the plane. One of his friends told me he expected to find him dead when the plane landed. He was just as calm as he was about everything when the trip was over, and his only expression was, 'It's all right,' which was a favorite answer to many questions, together with his famous smile and hearty laugh.

"You may be interested in knowing that he 'never tuk but one chaw of tobacco and never smoked.' He distilled whisky up 'to the time the Government put a tax on it,' as he says. His father before him distilled liquor. His father and mother both 'came over the water;' he says. They came from Holland, I think he stated. He was born in Eastern Tennessee and moved into Eastern Kentucky when about thirteen years old, and has remained there ever since, living for the past seventy years in the same log cabin on Greasy Creek that he now occupies. His father traded with the Indians, who made baskets in his neighborhood. They were always peaceable, he says, and his family 'never had no trouble with em.' He is a famous hunter, and just three months ago beat the best shots in his part of the country in a contest.

" 'Uncle John' saw his first circus parade in Lexington. The crowds attracted him as much as the parade, and at the conclusion of the parade he pointed down at the crowd and with a determined gesture de-



Uncle John's Air Trip

clared: 'All those people ought to be at work. That's the trouble with people to-day—they do not work enough. When I get back to Greasy Creek, I am going back to work. I have been ailin' a little for two years, and have not been able to do as much work as I wanted to, but I feel better since this trip than I have felt for years, and I am now going back to work.' Last reports from Greasy Creek were to the effect that he was carrying out his expressed intention. He certainly is some philosopher, as his remark about 'the trouble with people today' shows.

"Asked when he considered that he was in his prime, he answered: 'When I was about seventy-five years old.' His oldest living child (a daughter) is ninety-seven years old, and his young son five years old. He lived with his first wife over ninety years, until she died. He married a woman about forty years of age five years ago. The five-year-old child by his second wife is a dead ringer for the old man, those who have seen him say and the photographs of him confirm, and looks older than he actually is. The people on Greasy Creek and doctors declare it is his child.

"Two doctors examined him while in Lexington and they said he had the blood pressure of a man of forty-five years, and that, barring sickness or accident, was good for at least twenty years more. He walks unaided, carries one of the long walking sticks so familiar in the mountains, wears a big beaver hat so popular in the mountains, is not over five feet in height, is stooped, but walks with a quick, cat-like tread, and stood the hottest weather of the season in a tent on the Fair Grounds better than any one of the thousands who called to see him. He shook hands with 1,400 in one day, which was the only time he was fatigued to any extent.

"Upon this occasion he met, talked with and had his hand shaken by a continual stream of people from 1:30 P. M. to 8 P. M., when he returned to the hotel, ate supper and retired. He complained the next morning, for the first and only time, of being short of breath. By noon he was back on the job, in fine shape, and went through the same performance with several hundred visitors. He traveled thirty miles on horseback over the mountains from his home to the nearest railroad station when he started out for Lexington. He first went to Tennessee to visit the place of his birth, spent a few days there, came to Lexington and spent a week at the Fair, went to Louisville and spent a week at the Fair, went to Nashville and spent one day. He then returned to his home, coming back via Louisville and Lexington; so you see he can stand tiresome travel as well as other things connected with the discovery of a man who claims the world's record on longevity.

"This is the first time the writer has gone into detail in answering letters concerning Uncle John Shell."

# For Your Health—Make a Garden

R. V. ASHLEY

As a remedy for your mental lethargy, your flabby muscles and your stagnant vital activities—make a garden. And always in the making of it, if your heart is in tune with the things of creation, you will "go forth under the open sky and list to Nature's teachings."

There is joy in the garden—the joy of nations.
There is soul in the garden—the soul of a creative optimist.
There is health in the garden—vigorous, active, exuberant health.
Yea, more—life itself is in the garden.

As you go, morning by morning, into your garden, making and re-making it, planting and transplanting, weeding and cultivating—stirring the soil and thinning the plants, staking a plant here and pruning one there, harvesting and replanting, you may find health of body, inspiration of spirit and peace of mind—health vibrant with new blood tingling in your veins, nostrils dilating with the breath of new life, muscles tense and resilient in the joy of action. For you know that action is the first law of life and therefore of health.

For growing things there must be seed, soil, light, warmth and moisture. Your seeds, of course, have been ordered with due care after much study of many voluminous catalogs, and are ready for the sowing at the first propitious moment. If, however, by any chance, you have neglected this little detail, by all means do it now.

Next, soil. Of course your garden plot is ready. Its size has been determined by choice or by necessity. It has been cleared of rubbish, which is better burned. The soil is ready for the plow or spade. Soil is at once the medium into which we place the raw material—seeds, and the source of the plant food which nourishes the plant throughout its cycle of growth. To it we can add at will plant food—fertilizers—air, and moisture. The sun, of course, is the source of warmth.

Soils generally may be classified as clay, sand, loam, or muck. More often than not the garden soil is a combination of two or more of these. Clay soils are composed of extremely fine particles of soil matter. Theoretically, the finer the soil particles the more thoroughly and surely will they expose the plant food so that it may be taken up and utilized by the fine rootlets of growing crops. Practically, however, because of these fine particles of soil matter, clay soils absorb so large an amount of moisture that growth is retarded or perhaps altogether stopped. Such soils are very difficult to work, and when dry may become so hard as to shut out air and moisture from the plants, and make their working impractical if not impossible. If however, an abundance of humus—decayed vegetable matter that makes loamy soils—be supplied, these difficulties disappear.

Sandy soil is likely to contain very little plant food. Water passes through it so readily that very little will be retained. It dries out quickly in consequence. It may be "worked" perhaps more easily than any other soil, but in hot or dry periods is likely to become so dry and loose that plant growth ceases. Neither pure clay nor pure sand makes a desirable soil for gardening. Muck soils may be easily worked and usually contain an abundance of nitrogen, tending rather to the development of leaf than of root growth. Such soils, however, are often deficient in certain necessary elements of plant food, and consequently are not desirable for general gardening, though often the best for lettuce and celery.

A combination of clay and sand with a rich supply of decayed vegetable matter that we call humus constitutes the best soil for the garden. But such soil is the development of years. It is, of course, essential that the soil in our garden have all the elements of plant growth in good proportion. Such soil is not likely to be found ready made. There may be too much clay, or too much sand, or deficiency of one or more essential elements of plant food. In any case, it is usually necessary to take the soil as it is; do the best you can with it and improve it from year to year by the addition of such elements as it may lack, particularly by the addition of the materials that make humus, and by cultivating so thoroughly as to keep it in the finest possible physical condition or "tilth."

The ideal soil should be porous and at the same time retentive of moisture, which involves an impervious subsoil—porous so that the surplus of water will be readily drained off, retentive of moisture so that dry weather will not too quickly affect it.

It should furnish favorable conditions for the development of soil bacteria, and should contain fair proportions of the principal elements of plant food—nitrogen, phosphoric acid, and potash.

The soil may be tested as to its deficiency in any or all plant foods, to determine whether it is "sweet" or "sour"—acid, to see if it contains a sufficient supply of humus, and to determine the presence or absence of beneficient soil bacteria, particularly those that favor the growth of legumes. Very probably you are not prepared to make these tests chemically. But you can send a representative mixed sample of your garden soil to your nearest agricultural experiment station and learn its virtues and defects.

The comparative acidity of the soil may be roughly determined by the litmus paper test. Acidity or sourness may be corrected by a light application of wood ashes or of air slacked lime applied after the soil has been thoroughly broken up by plow and harrow, or by spade-fork and rake. Ashes and lime serve also as plant food of definite value to most plants.

The following simple experiments may be easily made and will enable you to determine approximately other deficiencies of your soil.

Fill with soil to within an inch of the top a number of flower pots. Plant in each a few seeds of corn, peas, beans or other quick sprouting seeds. Add to one a quarter teaspoonful of acid phosphate; to another, a like amount of sulphate or muriate of potash, or a teaspoonful of wood ashes. It might be well to try both or all three, if convenient to do so. Then try combinations of any two or of all three, and watch the results. One of the pots will be used for a check, and to its soil no fertilizer will be added.

If the seedling plants show a weak growth and poor color, a deficiency of nitrogen is indicated. If the plants make a good start and later develop weak stems and slow growth, this may indicate an insufficiency of phosphoric acid in the soil. If the crop fails, or the seeds or grains developed do not show a plump, healthy appearance, a lack of potash in the soil is indicated.

These tests, of course, can not be considered as scientific, but they constitute an interesting experiment which you yourself can make, and will give general indications as to the characteristics of the soil with which you are working.

In all your garden work endeavor to maintain correct posture. Keep the backbone in its natural position. Educate yourself to do your bending and stooping largely at the hip and knee joints. This will keep your chest high and encourage deep, full breathing. And when from exertion or from choice you find yourself taking deep breaths and consciously expanding the chest, practice breathing out to the utmost of your ability so as to change as much as possible of the residual air in the lungs. Many persons practice deep breathing by inhaling vigorously and deeply but, perhaps, are ignorant or negligent of the equally beneficial effect of deep exhalations. Then stand erect as possible in all your work or play, hold the chest high, breathing deeply in and out. And make such use of your muscles as will tire them, but not to the point of utter fatigue.

The deeper breathing will insure better aeration of the blood; the muscle action will promote better circulation of the blood and consequently better nourishment of every bodily tissue and the better functioning of every vital organ. Result—the glow of health upon your cheek, the spring of youth in your step, the vibrant urge of every muscle to action, the joy of accomplishment and the satisfaction of well doing.

## Mechanics of Garden Making

If as yet the ground has not been prepared, you will begin with the spading fork, which is by all odds the best implement for turning the soil by hand. Larger gardens will be plowed and harrowed, but our own intimate gardens will be made mostly by hand and the labor of love. The spading fork breaks the clods into finer masses so that with the garden rake following, the ground may be put into prime condition for planting. In order to turn and crumble well, the ground should be in the condition called friable—thoroughly moist but not stickily wet.

The spading fork should be sunk full length straight into the ground. The amount of soil lifted at each forkful of course will vary with the strength and will of the individual. It need not be large. In fact, if each forkful consist of a slab of soil about one inch in thickness, the work may be done easily and the ground will be left more likely in ideal condition, after thorough raking, to receive the seeds which later shall furnish bounteous harvests for immediate use and for winter storage.

An ordinary spade may be used, but if so, the soil is likely to remain in slices as it is turned, and the slices are much less easily broken up to make a fine seed bed.

If the soil is poor or not as fertile as you would like, it should be enriched with well rotted stable compost, preferably put on the preceding fall; or with pulverized sheep manure, bone meal, or any good commercial fertilizer. These latter are best sown broadcast over the spaded ground and then incorporated with the top soil by thorough raking.

In the vegetable garden, do not make beds, but plant the seeds in rows. For this purpose you will require a good garden line, two strong stakes, and some sort of measuring device. In our own personal garden which we are building by hand, the rows may be from one foot to two feet apart, according to the nature of the plants to be raised, and the particular tools with which the ground is to be cultivated. I have found fifteen to eighteen inches a very satisfactory working distance apart for the rows in the hand-made garden.

In sowing seeds be careful not to cover them too deeply. In general the depth of the soil covering the seeds should be about four times their own diameter. A covering of half an inch is ample for the seeds of radish, lettuce, onions, etc. Melon and cucumber seeds should be covered about one inch deep, and corn, peas and beans may be covered two inches deep.

In every instance be sure to press the soil firmly over the seeds after they have been sown and covered. This is especially important when the ground is rather dry.

Do not sow seeds too thickly. It will be found an advantage in the case of very small seeds such as those of carrots to mix the seed with dry sand or soil, sowing the mixture in the furrow. Not only will this prove an economy in the use of the seeds, but it will also save much labor later in the necessary thinning of the young plants.

The seeds of hardy vegetables may be sown in April, or as soon as the ground can be worked. Indeed, onion seed is said to give best results when planted in the snow, where the ground has been previously prepared. The seeds of extra early peas, onions, radishes, beets, lettuce, corn salad or fetticus, spinach, parsnip and salsify or vegetable oyster should be sown this month. The seeds of other garden crops should not be sown until several weeks later, when the ground is thoroughly warmed.

To insure the health and vigor of seedling plants, the ground should be kept moist. It must not become dry. On the other hand, however, it should not be soaked with water, for this is likely to cause the tender, young seedlings to "damp off" even if planted in the open. If you are the true garden lover, you will quickly develop a fine sensibility as to the proper amount of moisture for the young plants.

Artificial watering is sometimes necessary, especially in dry weather, but do it well or not at all. The ground should be thoroughly drenched, for little watering at such times is almost as bad as none at all. Remember that "the hoe and rake produce better vegetables than the hose." If the soil is in good condition and fairly retentive of moisture, then thorough cultivation twice a week, with care to maintain a dust mulch in dry weather, will involve the minimum amount of watering in time of drought.

Your garden plan should provide for successive crops. No part of the ground of your garden should be idle during the growing season. As soon as the first ripened crop has been harvested, other seeds should be sown. It is generally better to sow the seeds of some other plant than the one last grown, because the advantage of the rotation of crops is as distinct in the garden as on the farm. Celery may follow early peas, cabbages the second early sorts, and endive or spinach may follow the later varieties. Beans may follow both early cabbage and early cucumber vines, and turnips make an excellent follow crop after early lettuce. Radish seed may be sown between the rows of lettuce. Thus the ground will yield three crops, as the radishes will be out of the way before the lettuce is ready. Cabbage and kohl rabi are excellent crops to follow early spinach.

Another excellent combination for the same row consists of carrots and parsnips. If not too thickly sown, or if properly thinned, these two crops may be grown very successfully in the same rows, as the carrots will be well out of the way before the space is needed by the growing parsnips. A common error in the raising of the latter is to allow them to become too crowded. Three inches apart is none too much if you wish to raise the finest parsnips.

Indeed, it is often a good plan to sow radishes rather thinly along with the seeds of lettuce, parsnips, salsify, beets and spinach. They help to mark the rows in case of the slower sprouting seeds, and in any case are out of the way before the other plants are large enough to require the space.

If you have ample space, peas may be sown every two weeks from April 1st to July 15th. It should be remembered that peas and other so-called "hardy" garden crops reach maturity when sown in May and later in half the time required when the same seeds are sown in April. Some crops, however, such as spinach, corn salad and lettuce require to be sown early, as they make the best crops in cool weather. Spinach and radish seeds may be sown once a week until the end of May. The common sorts of spinach do not do so well if sown later, but there are some varieties that may be depended upon to furnish abundant crops even during the heat of midsummer, provided, of course, that they have the benefit of good garden culture. There are quite a number of little known varieties of spinach and related plants which will be discussed in a later article.

In view of the recently proven importance of the diet of "greens" such as spinach, kale, dandelion, endive and other plants of this type, the matter of raising "greens" will prove a worth-while hobby of the home gardener, and if freely eaten will well repay the user for the space occupied and the care of raising them, by the valuable food elements contained in them and which are in no other way so easily available.

Lettuce should be sown every ten days; carrots and beets every two weeks, and string (or rather, stringless) beans once in three weeks.

Following is a list of representative varieties of standard vegetables, the most of which every self-respecting kitchen garden will contain:

| | |
|---|---|
| Bean, bush, greenpod | Early Bountiful. Stringless Green Pod. |
| Bean, bush, wax | Rust Proof Golden Wax |
| Bean, bush, lima | Burpee Improved |
| Bean, pole | Golden Cluster |
| Bean, pole, lima | Early Leviathan |
| Beet, extra early | Extra Early Egyptian |
| Beet, main crop and winter use | Detroit Dark Red |
| Brussels sprouts | Long Island Improved |
| Cabbage, early | Copenhagen Market |
| Cabbage, late | Danish Ball Head |
| Carrots, extra early | Early Scarlet Horn |
| Carrots, main crop | Danvers Half Long Orange |
| Cauliflower | Early Snowball |
| Celery | Golden Self Blanching, Winter Queen |
| Corn, early | Golden Bantam, Howling Mob |
| Corn, main crop | Country Gentleman, Stowell's Evergreen |
| Cucumber | Davis Perfect. Try Japanese Climbing |
| Eggplant | Black Beauty |
| Endive | Giant Fringed, Witloof Chicory |
| Kohl Rabi | White Vienna |
| Lettuce, leaf | Grand Rapids |
| Lettuce, head | Earliest Wayahead, Iceberg, Big Boston |
| Musk Melon | Emerald Gem, Bush, Hearts of Gold |
| Onions | Yellow Danvers |
| Peas, early smooth | Alaska, Thomas Laxton |
| Peas, sweet wrinkled | Gradus, Champion of England, British Wonder |
| Parsnips | Improved Hollow Crown |
| Radish, globe | Rapid Red, French Breakfast |
| Radish, long | Long Scarlet, White Icicle |
| Radish, summer varieties | Chartiers, Lady Finger |
| Radish, winter | White Chinese |
| Salsify | Sandwich Island |
| Spinach | Victoria, New Zealand, Rocky Mountain or Orache |
| Squash, summer | Golden Summer Crookneck |
| Squash, winter | Hubbard |
| Swiss chard | Lucullus |
| Tomato | Earliana, John Baer, Chalk's Jewell, Dwarf Giant |
| Turnip | Petrowski, White Globe |

In another article we shall describe newer or little known varieties of "greens" and other vegetables, many of which should be better known and more generally raised in the home garden.

Flower gardens also will be later considered.

When you garden, and as you garden, remember that the garden with a soul may be to you a real sanctuary. And after a little season spent in such a place, whether in useful occupation or in quiet contemplation, one may well say, with apologies to Shakespeare—

"For here our life, exempt from public haunt,
Found tongues in trees, books in the running brooks,
Sermons in stones, and HEALTH in everything."

# The Servant of All

From relative obscurity five years ago, the Salvation Army fought its way during the war to hard-won recognition, then universal affection, and today in the United States, as in every one of the sixty other countries in which it works, the organization is entering upon a period of unequalled expansion and service. It has "arrived," although its possibilities for usefulness and service in many varied fields are only beginning to be realized.

Even in the short year since the "Sallies" made their successful appeal in the spring of 1919 for $13,000,000 from the country at large, the organization has demonstrated what it can do if given adequate financial support. This same year marks the first in Salvation history in which even meager budgets did not have to be reduced mercilessly. But with the money at hand, new life and vigor have poured into every channel of the organization's activity.

Salvation Army maternity hospitals and rescue homes furnish a case in point. A chain of admirable institutions stretch from coast to coast. They are located for the most part in the larger cities, but to them Salvation Army officers from all the surrounding territory send such unfortunate girls as appeal to them. Medical care is of the best. But more than this the atmosphere is that of a real home.

No mere "institution"—these Salvation Army maternity hospitals. Nor are they allowed to be in the slightest degree dreary. Every girl in them may have a terrible tragedy in her life, but prating about it is tabooed. From terror, or grim despair, or wild threats of self-destruction or infanticide, the girls are slowly won back to a normal attitude toward life. If ever the best is made of the worst, it is in a Salvation Army rescue home.

In any twelve months, the twenty-five maternity hospitals and rescue homes maintained in the United States by the Army, will care for almost 2,000 erring girls and about 1,500 children. Both mothers and children are housed, fed and clothed, until together they are able to go out and face the world.

Lieutenant-Colonel Emma J. Bown, superintendent of the Booth Memorial Hospital and Rescue Home, in New York City, one of the most famous of these Salvation Army institutions, says that the work, in her estimation, is as interesting and important as any fostered by the organization. Certainly the little lady in the accompanying picture would heartily second this statement. She is one of more than a score of youngsters who, with their mothers, were in the home at the time.

The Salvation Army's second nation-wide appeal, to be made May 1st to 10th, is to raise the funds for the maintenance of these institutions and the multifarious other work of the Army. With the World War over, the Salvationists have plunged anew into the eternal battle against sin, disease, distress, misfortune and the myriad human woes. Who can say that the world is not better for what the "Sallies" are doing?

# Interesting Observations by Dr. Benjamin Rush

[We extract the following paragraphs from a paper read before the American Philosophical Society, in Philadelphia, February 4, 1754, by Dr. Benjamin Rush, of Philadelphia, one of the founders of American medicine, and one of the most eminent physicians of his time, and further distinguished as one of the signers of the Declaration of Independence.

It is not necessary to suggest to the reader the important lessons which may be drawn from these very apt observations.—Ed.]

## Artificial Appetite

"The appetite we sometimes observe in children for flesh is altogether artificial."

## Salt

"Although the interior parts of our continent abound with salt springs, yet I cannot find that the Indians used salt in their diet till they were instructed to do so by the Europeans."

## Thorough Mastication

"The Indians have no set time for eating, but obey the gentle appetites of nature as often as they are called by them. After whole days spent in the chase or in war, they often commit those excesses in eating to which long abstinence cannot fail of prompting them. It is common to see them spend three or four hours in satisfying their hunger. This is occasioned, not more by the quantity they eat, than by the pains they take in masticating it."

## Drinking Water

"They carefully avoid drinking water in their marches, from an opinion that it lessens their ability to bear fatigue."

## Cold Water Drinking in Fevers

"They follow nature in allowing their patients to drink plentifully of cold water; this being the only liquor a patient calls for in a fever."

## Sweating

"Sweating is likewise a natural remedy. It was probably suggested by observing fevers to be determined by it. I shall not inquire how far these sweats are essential to the crisis of a fever. The Indian mode of procuring this evacuation is as follows: the patient is confined in a close tent, or wigwam, over a hole in the earth, in which a red hot stone is placed; a quantity of water is thrown upon this stone, which instantly involves the patient in a cloud of vapour and steam; in this situation he rushes out and plunges himself into a river, from whence he retires to his bed. If the remedy has been used with success, he rises from his bed in four and twenty hours, perfectly recovered from his indisposition. This remedy is used not only to cure fevers, but to remove that uneasiness which arises from fatigue of the body."

## Cold Bath in Fever

"I am uncertain whether the Indians rely upon astringent or any other vegetables for the cure of intermitting fever. This disease among them probably requires no other remedies than the cold bath, or cold air. Its greater obstinancy, as well as frequency, among ourselves, must be sought for in the greater feebleness of our constitutions."

## The Feet

"I do not find that the Indians ever suffer in their limbs from the action of the cold upon them. Their moccasins, by allowing their feet to move freely, and thereby promoting the circulation of the blood, defend their lower extremities in the daytime;

and their practice of sleeping with their feet near a fire defends them from the morbid effects of cold at night. In those cases, where the motion of the feet in their moccasins is not sufficient to keep them warm, they break the ice, and restore their warmth, by exposing them for a short time to the action of cold water."

### Moccasins Saved Feet from Frost Bite

"It was in Canada, in the winter of the year 1759, during the war before last, that none of the soldiers who wore moccasins were frost-bitten, while few of those who escaped that were much exposed to the cold wore shoes."

### Keen Senses

"An Indian, we are told, will discover not only a particular tribe of Indians by their footsteps, but the distance of time in which they were made. In those branches of knowledge which relate to hunting and war, the Indians have acquired a degree of perfection that has not been equalled by civilized nations."

### Diseases of Civilization

"We shall trace the origin of their diseases through their customs in the same manner in which we did these of the Indians.

It will be sufficient to name the degrees of heat, the improper aliment, the tight dresses, and the premature studies children are exposed to, in order to show the ample scope for diseases, which is added to the original defect of stamina they derive from their ancestors."

### The Warm Bath

"Dr. Franklin owed much of the cheerfulness and general vigor of body and mind which characterized his old age, to his regular use of this remedy. It disposed him to sleep, and even produced a respite from the pain of the stone, with which he was afflicted during the last years of his life."

### Fomentations and Sweats for Dropsy

"Dampier, in his voyage round the world, was cured of a dropsy by means of a copious sweat, excited by burying himself in a bed of warm sand. Warm fomentations to the legs, rendered moderately stimulating by the addition of saline or aromatic substances, have often done service in the atonic dropsical swellings in the lower extremities."

### Tea a Cause of Gout

"I have heard enumerated among the remote causes of the gout, the use of strong tea. I infer its predisposing quality to that disease, from its frequency in Japan, where tea is used in large quantities, and from the gout being more common in that sex in our country who drink the most and the strongest tea."

### Prison Diet for the Gout

"I have known of several instances in which the accidental suffering from abstinence, pain and terror have been the happy means of overcoming a predisposition to the gout. A gentleman from one of the West India islands, who had been for many years afflicted with the gout, was perfectly cured of it by living a year or two upon the tempered diet of the jail of this city (Philadelphia), into which he was thrown for debt by one of his creditors."

### Cold Water Douche for Drunkenness

"A napkin should be wrapped round the head, and wetted for an hour or two with cold water, or cold water should be poured in a stream upon the head. In the latter way I have sometimes seen it used, when a boy, in the city of Philadelphia. It was applied by dragging the patient, when found drunk in the streets, to a well, and pumping water upon his head for ten or fifteen minutes. The patient generally arose, and walked off, sober and sullen, after the use of this remedy."

### A Drunken Goat

"A noted drunkard was once followed by a favorite goat to a tavern, into which he was invited by his master and drenched with some of his liquor. The poor animal staggered home with his master, a good deal intoxicated. The next day he followed him to his accustomed tavern. When the goat came to the door, he paused; his master made signs to him to follow him into the house. The goat stood still. An attempt was made to thrust him into the tavern. He resisted, as if struck with the recollection of what he had suffered from being intoxicated the night before. His master was so much affected by a sense of shame, in observing the conduct of his goat to be so much more rational than his own, that he ceased from that time to drink spirituous liquors."

### Cholera Infantum

"The summer fruits have been accused of producing this disease. To this opinion I object that the disease is but little known in country places, where children eat much more fruit than in cities. As far as I have observed, I am disposed to believe, that the moderate use of ripe fruits, rather tends to prevent, than to induce disease."

# Why Tuberculous Persons Without Funds Should Not Leave Their Home States

It is reliably estimated that several hundred tuberculous persons without funds come to Denver every year. Practically all of them come because they have the mistaken idea that climate will cure tuberculosis.

They arrive almost penniless, without having made any inquiries or any provisions for their needs. Since Colorado has no State and Denver no municipal tuberculosis sanatorium (merely a ward at the County Hospital for thirty-five very sick tuberculous residents), the care of such indigent persons is limited to a few free private sanatoria, which are continuously so overtaxed that admittance is a long and difficult matter. These sanatoria comprise: the two Jewish, which accept only a small number of Gentiles; a tent colony of men with a capacity for seventy "down-and-outers"; and a small home for a dozen destitute tuberculous women.

These tuberculous poor who migrate to Denver, finding no place where they can be cared for, look for light work in order to maintain themselves and often their dependent families; but the demand for such work is far in excess of the supply. Driven to any work they can get, with neither friends nor care, anxious, homesick, hopeless, they rapidly grow worse, and usually soon die. They die for lack of proper rest, food, fresh air, and medical attention, those essentials of treatment which many of them could have had at home—or here with sufficient funds for two years' care. Without these essentials, climate is of no avail. If it were, Denver would welcome these tragic health-seekers instead of urging them, for their own best chances, to stay at home.

Denver also urges that the several States plan definite programs to retain their indigent tuberculous, giving them effective treatment in State sanatoria or in their own homes.

THE DENVER ANTI-TUBERCULOSIS SOCIETY,
221 Coronado Bldg., Denver, Colo.

# Department of Eugenics

# Does Alcohol Affect the Germ-cells?

GERTRUDE C. DAVENPORT

It is frequently stated that the children of alcoholic parents are less intelligent than are those of the strictly temperate. It is well recognized that alcoholics are persons more or less feeble in mind or in inhibitions; both of which are hereditary characteristics. Does the alcoholic transmit stupidity to his offspring because he is himself stupid merely, or does his alcoholic state have an additional depressive effect on his offspring? To find out whether the children of alcoholics are less intelligent just because of the alcoholism of the parents a series of experiments has been conducted at the Station for Experimental Evolution by Dr. E. C. MacDowell. Obviously it was infeasible for the Station to experiment with humans, although, at the time the study was begun, many voluntary experimenters existed in the neighboring towns as well as elsewhere. It is a delicate matter, however, to classify and study the children of one's neighbors on the basis of the alcoholic habits of their parents. Moreover, human alcoholics are of different types, such as periodic and constant. Also, it is not possible for an outsider to know the behavior of all parents in respect to alcohol; hence he could not decide into what categories to put the children.

For the purpose of this study, namely, the effect of alcohol on the descendants of alcoholics, it was desirable to have the circumstances of alcoholization uniform and under experimenter's control. White rats were chosen for the study because of the ease of maintenance and the rapidity with which the generations appear. Two sets of rats were maintained. One set was subjected to alcohol, and was known as the test set. The other, called the control set, was reared under normal conditions. With the exception of the alcohol, all the other conditions of housing and feeding were exactly alike for both sets. Moreover, the two sets were made up of blood relatives of the same size and age. That is to say, for each rat alcoholized the control set contained another from the same litter and of the same sex.

Since all the rats refused food and drink when alcohol had been added thereto, it was necessary to administer the drug to them in volatile or vapor form. Accordingly, the rats were enclosed in a chamber where they were exposed to the fumes of alcohol until they lost the power of muscular coordination. Under these conditions they would stagger about or even become as helpless as the human addict who falls by the wayside. It is of interest to note that it took a longer time to make some rats drunk than others, and that females became drunk more easily than the males. It was the children and the grandchildren of rats thus subjected to alcohol that afforded the material on which the intelligence tests were made.

The intelligence tests applied to the alcoholized rats were based on the ability of the rats to find food under unusual conditions. They had to open doors in puzzle boxes, make multiple choices, or run through the intricacies of circular mazes, before they reached the goal of bread and milk. It will be recalled that the rats in the two first test sets were brothers and sisters in equal numbers, and hence of equal potential intelligence. After alcoholization, the test rats were not only slower in learning to go to the right spot to find the food, but they made more mistakes, such as opening wrong doors or making wrong turns in the maze. Thus the inability of alcoholic rats to make correct decisions and deductions parallel the condition in man; for alcoholized railroad engineers read colored signals and other dispatch signals incorrectly with greater frequency than do the strictly sober. Alcoholics likewise suffer from a lack of muscular precision in that they are more prone to injury from the machinery in factories. So much for the effect of alcohol on the parents.

Let us now proceed to its effect on the children. These children were never placed in the alcohol chamber after birth, and only received alcohol through the mother's blood circulation and her milk. The same training tests, namely puzzle boxes, multiple choice apparatus and mazes, were used to train the offspring that had been employed for the parents. In their responses to these tests both sets of rats resembled their parents; for the descendants of the alcoholized rats were slower to learn their food-searching lessons and made more mistakes with wrong doors and turns than did their non-alcoholic cousins of the control set.

Since the contention might be made, with some justice, that these descendants of alcoholic parents were in reality themselves alcoholics in the earlier periods of their life, the same intelligence tests were now applied to their children in turn, namely to the grandchildren of the rats with which the experiment began. The parents of this second generation of rats never came directly in contact with alcohol, and hence their children were never subjected to it at any time during their lives. The results obtained in this last series of training tests were given by Dr. MacDowell at the last meeting of the American Naturalists, in Princeton. In this test 23 rats were used whose grandparents were alcoholics, and in the control test 23 rats from normal parentage. The rats in the control tests were blood relatives of those in the test set, and hence were in every other way, save the alcoholization, comparable.

"Each rat," said Dr. MacDowell, "was given three trials a day for eight days; after a vacation of thirty days as a test of retention 12 trials more were given." "As long as the children of the alcoholics themselves were studied, there was always a possibility of the alcohol working directly through the body of the mother upon the young; but this is no longer a possibility when it is the grandchildren that are considered. If there is found an effect of alcohol in the second generation after treatment, it will look as though some modification in the constitution of the first generation had been affected by the treatment." The grandchildren were trained in the same maze used for the study of the behavior of their parents and grandparents. The test rats did not learn to make a perfect trial until the third day, whereas their control cousins succeeded on the second day. More individuals in the control set learned each day to run the course of the maze than in the test set. Moreover, the controls made more numerous successful runs. As in human behavior, so with rats, a few individuals were found in both sets that could not learn to run the maze. This inability was slightly greater in the test set. "Rats with alcoholic grandparents spend more time on the average in the maze than do their normal controls; they make more errors and fewer trials without any errors." Whether this difference is one of intelligence, learning capacity, or whatever one chooses to designate it, matters little. As the facts stand, there is a difference, and the difference serves to demonstrate that in some way the alcoholization of the grandparents affects the grandchildren, at least in certain respects, adversely; and thus do the sins of the fathers descend upon the children.

# Babies of 1917

The population of a country may be viewed either quantitatively or qualitatively. The quantitative aspect belongs to demography, the qualitative to eugenics. The interests of eugenics are primarily with comparative populations; nevertheless, large averages have an interest as affording bases for comparison.

In any nation, state, town or other unit the population is constantly changing. Any change in numbers is due to additions by birth and by immigration from other units, less subtractions due to death and to emigrations into other units. Thus natality, mortality and immigration are of fundamental importance for demography and have their interest for eugenics also.

The United States constitutes one of the largest civilized nations of the globe. It has experienced in the past two or three decades an unexampled immigration, of which a fairly accurate count has been made. But we have never had for the country as a whole, any complete nativity and mortality statistics. Such statistics are now being secured from the States of the Union by the United States Bureau of the Census, which has just published the Third Annual Report (1917) of Birth Statistics for the Birth Registration Area. This area is composed of most of the Northern and certain of the Southern states where state laws provide for birth and death registration. The number of births (exclusive of still births) registered in this area was roughly 1,350,000.

## Rate of Birth

The number of births in a country, state or town has only a limited significance, and tells nothing about the rate at which the population is reproducing itself by the natural (birth) method. Because there were born in New Hampshire only 9,500 children as opposed to New York with 246,000 children, one cannot reproach New Hampshire with not doing her duty in maintaining the population, for we have to make allowance in some way for the difference in the number of people of child-bearing age in New Hampshire and New York. The usual method of making the adjustment is to divide the birth figures of a state by its total population. This gives what is called the birth-rate and is usually expressed as rate per thousand. If we compare the birth-rates of New Hampshire and New York by this method, New Hampshire appears to a better advantage relatively. Her birth-rate is a little over 21, while that of New York is a little over 23. Thus it is clear that the birth-rate is a better base of comparison than is the absolute number of births.

The rate based on the whole population is not altogether satisfactory however; for if one unit were a mining region in a newly developed country, the population might consist mostly of men. In such a unit the birth-rate would be small on account of the rarity of potential mothers. Because of this possibility demographers have sometimes used the number of females in the population as the basis of comparison. But even this method has met with practical difficulties in certain parts of the world; in Ireland for example, where the women of child-bearing age migrate to a large extent, leaving the old women and the young girls to constitute an unduly large proportion of the population. Consequently, it is generally regarded as desirable to calculate the birth-rate by using as a divisor the number of women of child-bearing age. The age limits usually taken are from fifteen to forty-five years. Our birth statistics of the past three years suffer from the fact that they are too remote from the last census. Therefore the number of women from 15 to 45 years of age is inadequately known. Hence the birth-rates of the last three years must be based on a guess or estimate as to the number of such women in the total population.

Immigration aside, the growth in numbers of any unit of population depends on the excess of births over deaths. This difference gives what may be called the non-migratory change in the population. The birth-rate for the registration area as a whole was, in 1917, 24.6 per thousand. The death-rate for the same area was 14.1 per thousand. Thus the birth-rate exceeded the death-rate 10.5 per thousand or over 74%. "That is to say, if the birth and death rates were to remain unchanged, and if there were no migrations from or into the area to which the figures relate, its population would increase annually by 10.5 per 1,000, or by a little more than 1%." "The greatest excess of births over deaths—20.3 per 1,000 population—appears for Utah, and the lowest—4.7 per 1,000—for New Hampshire."

It is sometimes stated by birth control propagandists that a high birth-rate is always accompanied by a correspondingly high death-rate. But this is clearly too general a statement, for Utah has a birth-rate of nearly 31 per 1,000 and a death-rate of about 10 per 1,000. This is the smallest death-rate (except in Minnesota) of any state in the registration area. To return again to the case of New Hampshire, we find the small birth-rate of 22 per 1,000 combined with a high death-rate of 17. From the eugenic standpoint it is not desirable to increase the birth-rate and decrease the death-rate for the whole population, regardless. By custodial and other charitable means to rear all the congenitally deformed, both in body and mind, and at maturity to send such defectives out into the world to reproduce their kind is, for the good of the race, not an improvement on Nature's method of a high birth-rate and a high death-rate. By taking advantage of variability Nature is able to produce by a high birth-rate a larger number of individuals that are fit to survive. By means of a high death-rate she clears the stage of those whom she selects.

Passing down to details of birth statistics, we find many matters of eugenical importance. While every state and most of the cities in the registration area show a marked increase of births over deaths, this excess is most marked and regular where the foreign population is largest. The foreign population in these areas tend to increase rather by a high birth-rate than by a low death-rate. By tables in the birth statistics it is demonstrated that the percent of foreign born mothers is larger than the percent of foreign born females. In other words, the foreign born females play a larger role as mothers than as units merely, in the population.

## Proportion of Foreign Born in the United States

Taking the registration area (which excludes most of the states containing a large proportion of negroes) as a whole it appears that less than two-thirds of the children had both parents born in the United States, and just about two-thirds of them had one parent born here. We see therefore that one-third (33%) of the children born each year in this country are from foreign born parents. Of this one-third 7% are from Anglo-Saxon and Scandinavian stock including French Canada and Ireland; about a 12th of the 33% are Austrians, Russians and Poles (chiefly Jewish), another 7% Italians, Hungarians; and other races give about 4%. Since a large proportion of the population now immigrating to the United States is of non-Nordic stock (the Nordics are from Northwestern Europe) it is clear that the population of the United States is rapidly becoming non-Nordic.

## Birth-Rate of the Colored in the United States

Few Southern states have adequate birth statistics. We have, however, some means of comparing the birth-rates of whites and colored, at least for the urban population. In twenty-two cities in which the colored population numbered 10,000 or more, the birth-rate for the colored population is lower than for the whites, but we must make some allowance for failure to register the births of all the colored children. In the state of Virginia the birth-rate of the colored population is given as slightly in excess of the white, whereas in New York it is correspondingly less. For the registration area, as a whole, the rate for the colored is 25.8 and for the white 24.5. The death-rate for the colored is 22.5 and for the white 13.7. Thus it appears that although the birth-rate of the colored is about 1% greater than the white, the death-rate is 9% greater, and this is largely due to infant mortality. For among 1,000 colored children 151 die under 7 years of age, whereas of 1,000 white children 91 die under 1 year of age. In the cities the birth-rate of the colored is to the white as 23 is to 25, but the death-rate of the colored is just double that of the whites. In the rural districts the birth-rate is 4% greater than that of the whites and the death-rate is 6.5% greater. There is, however, a tendency for the infant mortality of the colored to decrease, and this diminution is greater in the rural than the urban districts. It seems pretty clear from the foregoing that colored people are not well adjusted to life in great cities, and hold their numbers there only by constant immigration.

## Size of Families in the United States

It is very difficult to learn the size of natural families in the United States. In the regular census all the people living in one house constitute a family, including servants. The house may be a hotel, an apartment house, or a shack. Even if the census gave the number of children for each mother, it would not give the desired information, since a distinction must be made between mothers still within and those beyond child-bearing age. The birth statistics do, however, give the number of the child in the order of its birth. Of the 1,350,000 children born in 1917 there was one boy who was stated to be the 25th child. He was colored. There were 5 children who were recorded as 23rd in order of birth. Three of these were colored, one Canadian (French Canadian) and of one the mother was born in Hungary. Of the 10 who were 22nd children, three were colored, two were white children of native mothers; one had a Canadian mother, one an Italian and one a foreign mother whose nativity was not recorded. Of course the number of cases of 21st, 20th and 19th children in a family are more numerous. More than one in 1,000 births had the ordinal rank of 15th child or higher. The most striking fact in large families is the relative frequency of French Canadian mothers. Italian mothers have more children of the ordinal rank of 15, but there are many more Italian mothers in the United States than French Canadian. Fifteen children or over were found among 1,000 children born to French Canadian mothers 6 times, to Germans (including German Poland) 4 times, to Italian and to other Polish women 2 times each, to Scandinavian and British 1½ times each, to Hungarian, Austrians, Russian Jews, Irish and mothers born in the United States less than 1 each.

Concerning the relative fecundity of towns and rural districts the report throws a little light. For cities as a whole the birth-rate is 25 per 1,000; for rural districts it is 24. The higher rate for the cities depends very largely on the larger proportion there of recent immigrants.

## Number of Children Who Survive

From the point of view of the future population it is not the number of children that are born, merely, but the number that survive to reach maturity that counts. The census report gives the total number of children born to each mother. The proportion that survive for the whole registration area is 876 per 1,000. For the whites the rate is 589 and for the colored 835. Of foreign born mothers the Scandinavians have the largest number of surviving children, namely 905 per 1,000. The rate for mothers born in Great Britain is 870, for Ireland 875, for Hungarian 821, Polish about 830. For mothers born in the United States the rate is 894. This rate is only exceeded by mothers of Scandinavian birth.

## Illegitimacy

The amount of illegitimacy is of interest as an indication of the willingness or the ability of the population to control their sex behavior according to the national mores. To a certain extent this control is determined by the thoroughness with which the sex mores are inculcated. In certain countries, such as Jamaica, the rate of illegitimacy is 750, or more per 1,000. Almost the entire population of this island has colored blood. In contrast, the rate in the registration area of the United States is 18 per 1,000. Even so, this rate includes the colored illegitimate. The rate for the whites alone is 12, for the colored 119. Among the whites, the rate varies somewhat with the nativity of the mothers. The rate for native born mothers is exceptionally high, namely 15 per 1,000; for Irish 12, Scandinavians 10, Great Britain and Russia 3, Italy 2. It is also to be noted that the rate varies in different parts of the country. Thus the French Canadians produce the most illegitimacy in Indiana, the Scandinavians in Ohio, the Russians in Utah, the Poles in New Hampshire, the British in Maine. These results are no doubt, in part, merely statistical, for when the absolute numbers in a category are small the ratio may be extreme. Taken as a whole, the rate of 12 per 1,000 makes an exceptionally good showing for the whites. Probably a laxness of social pressure in the United States accounts for the higher illegitimacy among the native born whites.

When we come to consider illegitimacy by states, we find the lowest rate in Kansas, namely 6 per 1,000. The rate ascends as follows: Utah 8, Washington 9, Kentucky 10, Maine 11, Massachusetts and Indiana 12, Ohio 13, Wisconsin, Vermont, Connecticut and New Hampshire 14, Michigan and North Carolina 15, New York 17, Minnesota 18, Maryland 19, Virginia 20, Pennsylvania 22, and Rhode Island 23. The numbers on which these ratios are based are rather large; nevertheless, they must be accepted with some caution. For in the more densely populated and socially better organized states like Rhode Island, Pennsylvania, Massachusetts and Connecticut, a larger proportion of illegitimate babies would be recorded than in the sparsely populated states with areas less accessible to physicians and town or county registrars. Despite differences due to thoroughness of registration it is quite clear that there is a radical difference between

Massachusetts with a rate of 12 and Rhode Island with one of 23; between Connecticut with a rate of 14 and Maryland with one of 19. The high rate for Rhode Island is probably associated with its density of population due to its great manufacturing cities. Factories always tend to lure girls of the moron type, who are especially prone to become unmarried mothers. The high rate in Virginia is not wholly due to the colored population, because we recall the great difficulties encountered by the health officers at Camp Lee, due to the failure of the authorities at Richmond and other cities to control public morals.

## Infant Mortality

The rate of infant mortality varies a good deal in different localities. The highest rate is found in Holyoke, Mass., where 195 per 1,000 babies die under one year of age. This exceptionally high mortality is neither due to the factories there nor to the large foreign population, but rather to the fact that there is located in Holyoke a so-called "home for infants." Whether "home" is the proper term to use for this institution is left to the reader's judgment. There are those who advocate, as a part of their political propoganda, the rearing of all children by the state in public nurseries. The scheme would seem to be one well destined to solve the problem of overpopulation; and if thoroughly applied in the country in which it is now advocated, would certainly help Western Europe to withstand the menace from the East. The infant mortality for the registration area in the United States as a whole is 94 per 1,000. The rate ranges from 66 for mothers born in Scandinavia to 173 for mothers from Poland. For negro children the rate is 149.

## Twins and Triplets

As everybody knows, all children are not born singly. Not only twins or triplets, but sometimes even higher combinations of children, are born to a mother at one time. There were in 1917 over 14,000 cases of twins, 155 of triplets and 2 sets of quadruplets. One of the sets of quadruplets hailed from Michigan and one from Pennsylvania. There were twice as many triplets born to Italian mothers as to any other foreign nationality. There was one case of colored triplets. Plural births approximate 1% of the whole. The rate varies in different states; it is highest in Virginia, where it is 1.5 per 1,000. North Carolina comes next, with 1.4. The tendency to produce twins is greater among negroes than whites, hence the high rates for Virginia and North Carolina. What the rates may be for the states further South we do not know. In New Hampshire, Michigan and New York there is less than 1% of twins. The twinning rate for the whole United States doubtless depends on numerous factors, but the racial is probably the most important.

## Age of American Mothers

Of the 1,300,000 odd mothers recorded for 1917 the ages ran from 14 or under to 55 years and over. The census returns are given in 5 year periods as 10 to 14, 15 to 19, etc. There are over 600 births recorded for mothers from 10 to 14 years. Of these about two-thirds are illegitimate. These figures serve to emphasize the lack of parental control in the United States. Illegitimacy is highest, 362 per 1,000, when the mothers are from 20 to 22 years of age, and decreases as follows:

| | | | | |
|---|---|---|---|---|
| 25 to 29 | years | 342 | per | 1,000 |
| 30 to 34 | " | 230 | " | " |
| 35 to 39 | " | 144 | " | " |
| 40 to 44 | " | 49 | " | " |
| 45 to 48 | " | 5 | " | " |

In the state of Utah the maximum illegitimacy occurs between the ages of 25 and 29. The fact that the highest rate comes at a later age indicates that there is less "prudential restraint" in Utah than in the country at large.

# Department of Physical Education

**Conducted by C. WARD CRAMPTON, M. D.**

Director of the Department of Physical Education, New York City Public Schools, and
Dean of the NORMAL SCHOOL OF PHYSICAL EDUCATION, Battle Creek, Mich.

## Gym+Swim=Vim

The Tired Business Man and I arrived at the Y. M. C. A. and stepped into a big room like a hotel lobby and looked around.

As we stood there, a man who looked like a successful automobile salesman greeted us, not as if he wanted to save our souls, but just as if he wanted to sell us an automobile. He explained that he was a new member, and that he figured that we might want to be new members too, if not now, perhaps in the future.

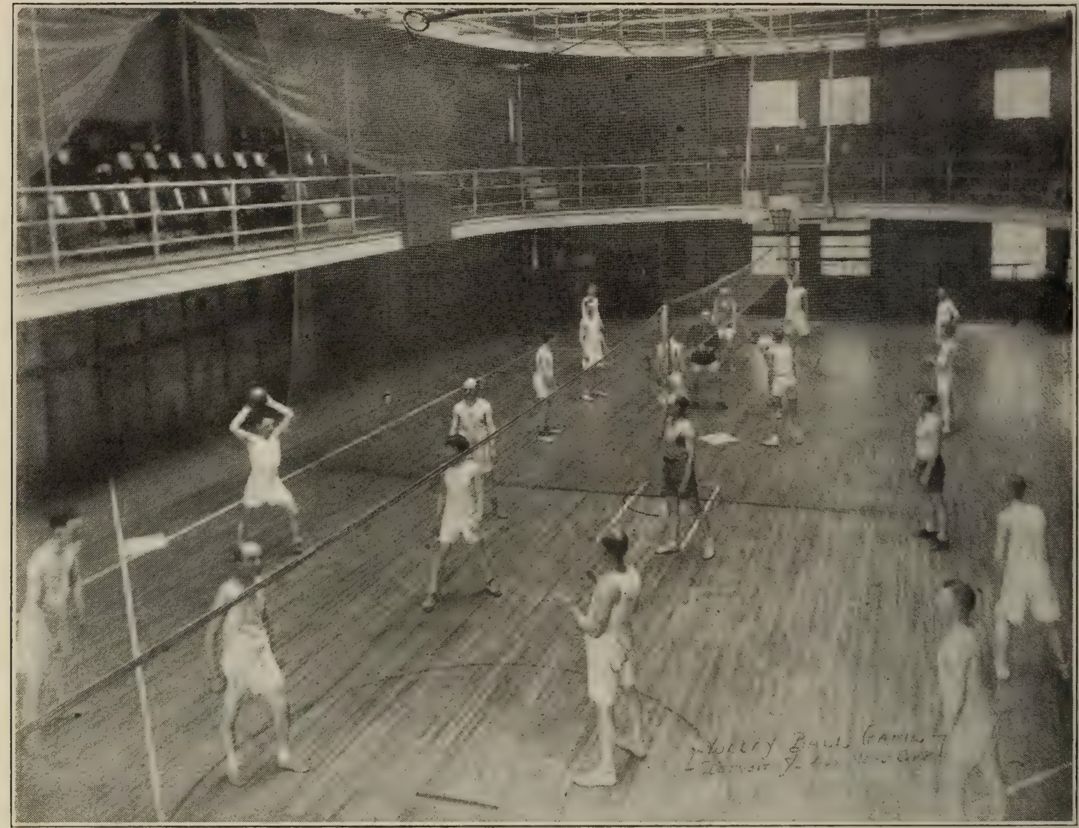
We inquired for the physical director, and found a young man of thirty-five or forty who looked like another good fellow, and who introduced himself. He looked us over with a pair of keen eyes which appeared to take in everything and yet give out an understanding kind of welcome. His handshake had nothing fishy about it. In fact, it seemed just as if he raised you a peg without crushing your knuckle bones.

He invited us to come in and see the boys, explaining that this was the day for volley ball. They were just coming in, and they came in just the way they used to come out of school. The door was burst open, a coat thrown off in a swirl; it was "Hello, Bill," Hello, Jake," "How's George?" "Have you got your fighting clothes on?" "We'll trim you today." Banter, jest and laughter filled the room while they got into their togs and straggled out on the floor.

We went into the gymnasium, and the director lined up the crowd for a brief setting-up drill before the fun began. They were not expert gymnasts by any manner of means. When the command, "Arms over-head" was given, the arms went into the air, somewhere but almost anywhere—very unlike the clean-cut, precise, cultivated attitude of the trained gymnast. The pianist played a lively tune and nobody seemed to care very much, for, contrary to common belief, they seemed to like it. There was a rhythm and a sort of "altogether, boys" about it that made you feel at home and in the midst of friends.

Then they played volley ball; six or more teams on the floor at once. Volley ball is a kind of tennis, with half a dozen on the side, and only one's hands for rackets. They weren't very expert, but beyond everything, they had a good time.

After the game, we chatted a while with the boys, and the physical director showed us around a bit. We looked over the shower bath, but we heard more than we saw; for when the crowd swarmed in and the cold water followed the preliminary warm, there was shouting, slapping and splashing. Some took the Turkish room and a steam bath, with an alcohol or salt rub, while others went straight to the plunge with the luxury of diving into water that had the crystal purity of the blue-



tinged diamond, filtered and sterilized by violet rays.

We went into the hand-ball courts and finally into the physical director's office, with its little desk, curious sets of measuring instruments, and pictures of by-gone athletic teams and champions.

We were handed a little booklet printed especially for the new members, and we saw how excellently the "Y." was planned for the whole man, not only for his physical preservation and uplift, but for the man as a man among his fellows,—the man when he is tired and oppressed, when he wants to live as well as work.

We found that it was a member of the Lobby Club who greeted us as we came in, that there was a Fellowship Club and a Glee Club, to say nothing of Billiards, Bowling, Checkers, Outing, Sunrise, Debating, and a dozen other kinds of clubs for the various tastes and interests.

Man is a social creature. He covets comradeship. The lobby is always alive with kindred spirits. It is the place where men can find congenial companionship.

Before we left, the director told us about the summer camp in the woods, and he said that it had done more good to more men than many a more direct Christian effort; for a hot town is no place for a young man to spend a summer evening, especially if he is lonesome.

In the lobby we met some of the men and chatted with them again; and for my own benefit and for yours, I asked them to write me what they thought of the "Y." and why they went to the Business Men's class, and here are some of the replies.

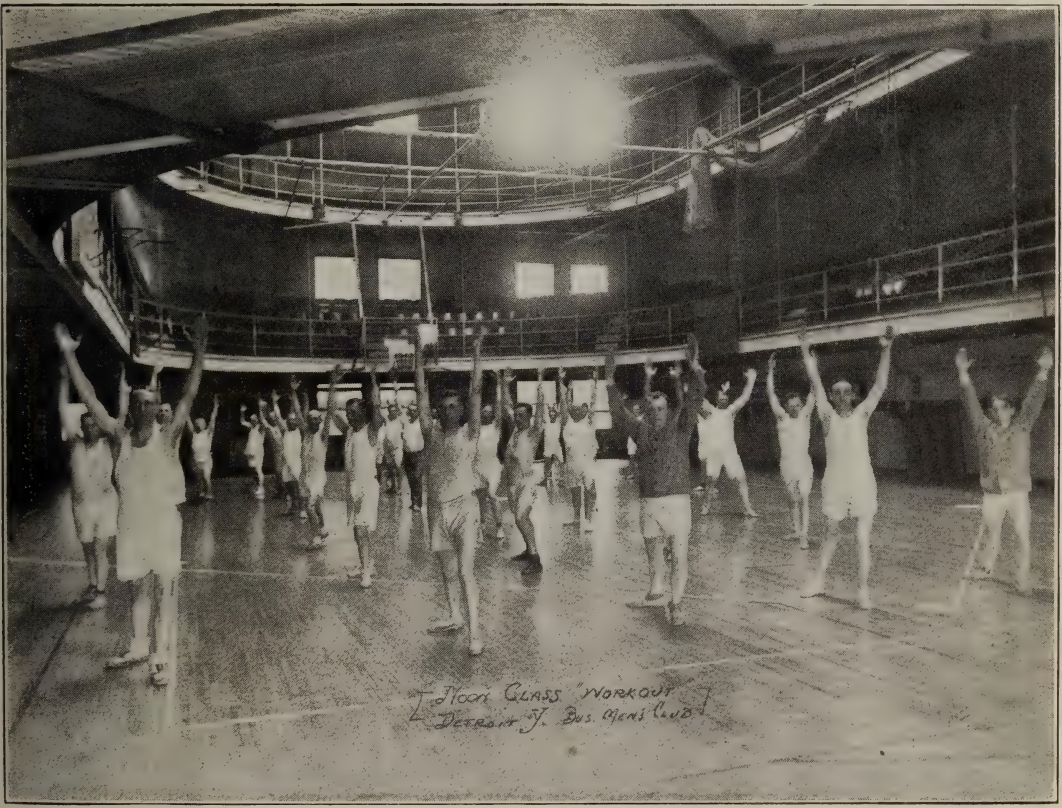
The first letter is from a man aged thirty-four, who worked his way through school and the University of Michigan, specializing in chemistry and ceramics. He discovered and developed a new process of applying plating to alloy base—a distinctive addition to the automobile industry. Close application to his work and lack of exercise and recreation almost proved his undoing. In desperation he turned to the "Y" for help. He got it, and in turn he's helping the "Y" a lot, for he believes in it. He goes into everything to *WIN* fairly, and we believe he is developing into the best all-around volley ball player in the State.

"For a number of years before I became a member of the Business Men's Club, I felt the need of the work and promised myself that I would soon join the "Y" and enjoy the benefits that I knew were to be had there, but I postponed it continually, feeling that I could not devote the time, and all the while I was nervous and out of condition. Finally, one of my friends literally dragged me in by the collar, and I have been there ever since.

"What I am about to say may sound like a recommendation for a patent medicine, but I am sincerely in earnest. I never felt better in my life than I do today. The minute I get on the floor all my cares roll away, and mentally and physically I am in 100% better shape than I was two years ago. The time I was afraid to give comes back to me ten times over, and I enjoy the associations and friends I have had more than I can tell.

"What I would like to say would fill several pages, but lacking space, I'll leave it as it stands with one addition. I am with you till I get so old and feeble that I can't put a volley ball back across the net. Then I'll take to the side lines and referee for my grandsons."

Here is a word from a prominent architect aged thirty-eight, who was born in New England and has practiced his profession all over the United States of Amer-


Floor Class "Workout"
Detroit Y. Bus. Men's Club

ica. He joined the "Y" when a boy and stayed a member wherever he went:

"For twenty-five years I have been a member of the Y. M. C. A., more or less actively. This in itself should be evidence enough of its worth to any man. My early days in the Association gave me a sound basis of right Christian living. My physical condition I owe entirely to this institution. The acquaintances made through its channels of meeting and knowing men, number some of my best friends today. I have always found as I moved about from city to city that the mere fact of being an Association man helped me to gain positions and acquaintances which would not have been easy otherwise.

"So I wish to emphasize the fact that once a fellow becomes associated with the Y. M. C. A. and stays with it, he is pretty sure to bless this institution all the rest of his days."

Here is another from a successful, quiet, easy-going lawyer aged fifty, who always does the right thing at the right time, and who gets all there is out of work or play. He never kicks—always smiles—and this is what he says:

"It is rather hard to give all of the particular benefits to be derived from the Business Men's Club, and I do not propose to attempt the feat; but I am glad to put myself on record as being heartily in favor of the Club. We professional men are rather inclined to devote our entire attention to our work, especially if we desire to get to the head in our chosen line. The midnight oil burns for many of us. We are apt to overlook the all-important fact that our bodies, like the engine, needs proper fuel and proper handling with plenty of lubricant to make all parts run smoothly.

"It has been my experience that the only proper lubricant is good, wholesome exercise in congenial surroundings; the place, a Gym like the "Y," where you meet clean men in a clean sport—a place where you get a relaxation from the mental strain of your

Indoor Base Ball Game
Detroit Y. Bus. Men's Club

work and for the moment forget that you are mature men.

"I believe that is one of the greatest helps of the Club—that moment of forgetfulness. All your cares and worries, in fact the whole world, is forgotten. and when you leave the Gym, the world looks brighter, your cares, which had seemed so hard a moment before, have dissolved, and you go forth to conquer."

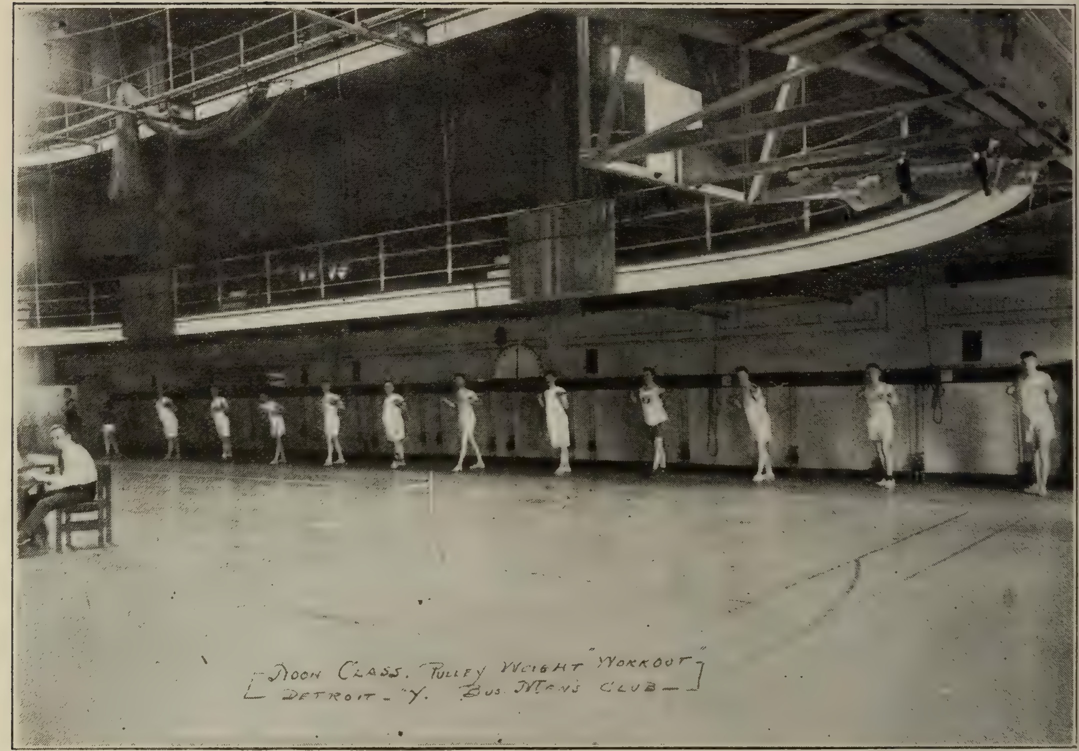
The next is from an attorney in civil practice who is fifty years old. He was born on a farm and worked his way through college. He had a hard struggle at the beginning of his practice, and just as success was within his grasp, his health failed on account of overwork. He joined the Business Men's Club. His letter tells the story:

"What benefits have I received from my membership in the Business Men's Club at the 'Y'? That is a long story. Outside of the fraternal features and the uplifting influences of the 'Y.' which are by no means the least important, I have found great benefit from playing on one of the volley ball teams, during the past three years.

"It has kept me physically fit. The close application to my professional duties for twenty-five years had greatly reduced me, physically, at the time I entered the Business Men's Club.

"I found in the games that complete mental rest, relaxation, and exhilaration, and that all-around general exercise, which I had needed for so many years. The fun and good-natured but keen rivalry of the game balances up the day perfectly, and fills you with the 'pep' which carries you over to the next game. All cobwebs are cleared from the brain, and you are ready for real, arduous mental work.

"Not the least beneficial to me has been the complete mental rest and relaxation of the game. I am sure that feature has greatly impressed every one whose nerves have been strained with mental work. Then, too, the physical exercise is general and af-


Noon Class. Pulley Weight "Workout"
Detroit – "Y. Bus. Men's Club

fects all parts of the body; and when through with the game, one's whole organism vibrates with renewed life and energy. Here's to the Business Men's Club of the "Y."

It is not only business men who neglect themselves. The worst offenders are often those who deal in health, and with all their dealings in health, lose their own.

Here is the word of a leader in the medical profession and a scholarly man, who is not one to be carried off his feet by any temporary enthusiasm, nor to drop any course of action merely from waning interest:

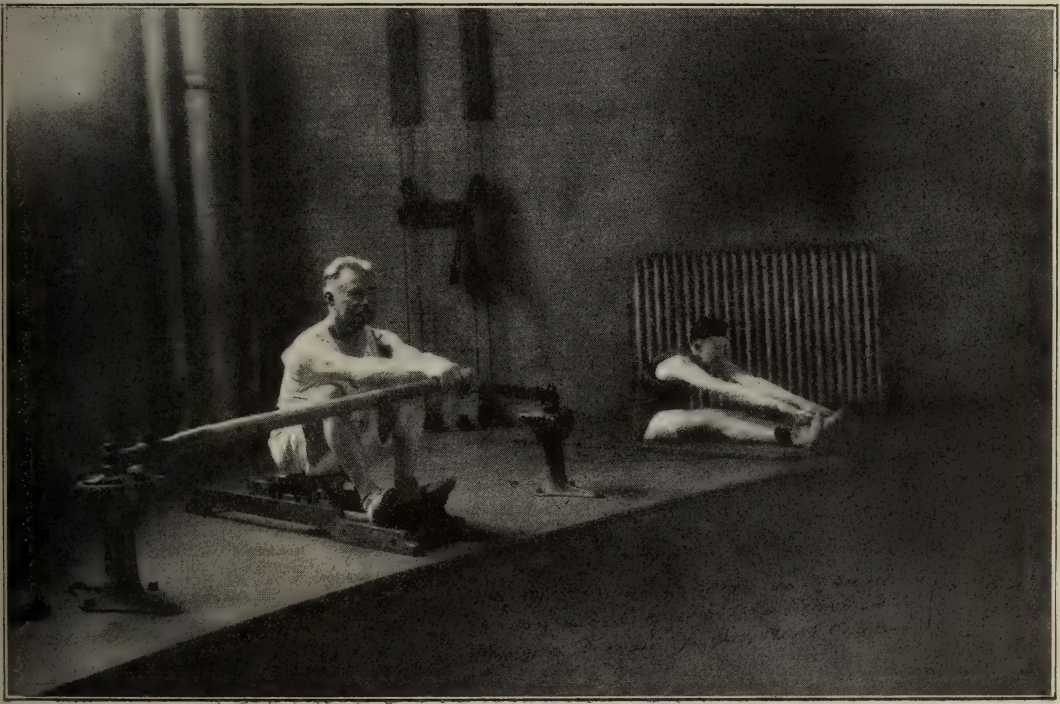
"I rejoined the Y. M. C. A. a few years ago, taking out a membership in the Business Men's Club, as I felt the need of physical exercise. For some years it had been impossible for me to do the walking I had formerly done. My mornings were spent in an automobile and my afternoons in an office. I found myself desiring to take a short nap after lunch, and was finishing up the day with a tired feeling. My ability to think clearly was lessened. My joints also were stiffening up, and were occasionally the seat of mild pains. Since resuming active exercise I have found myself possessed of a greater joy in living. A feeling of physical vigor possesses me most of the time, and I find I have a physical reserve which I can call upon in an emergency and which enables me to put a punch into my work when it is most necessary. I awake in the morning with a rested feeling, and find that it is possible for me to get along with less sleep than formerly.

"While my reasons for joining the Business Men's Club were on the physical side, I have also been greatly pleased with the by-products of this work—the opportunity of mingling with a set of men largely of my own age, many of them unusually successful in business. I have secured much inspiration from social contact with them. Men put into their play the same qualities which make them successful in other lines of activity and valuable lessons can be gained by watching when playing with or against them. The value of coolness, judgment and poise is emphasized in games. The effect of the hour's play is like a mental sponge bath. If the morning has been filled with perplexities and troubles, one of the mornings when everything goes wrong—the hour's work in the gym seems to clean off the slate, and the afternoon's work is started as if a new day had begun.

"The value of the Business Men's Club, it seems to me, can hardly be overrated. While at first it may seem to interfere with business, and occasionally, if one is faithful, may lose one a little immediate business, yet in the long run it is money in the pocket. Success in business depends upon one's ability to initiate new ideas for himself and to adapt the ideas of others. The gym gets us out of the rut and makes this possible for us. I find that for myself the result of the work in the gym has been a new mental and physical vigor. I am not only told by my friends that I look as young as I did years ago, but what is more important to me, I feel that way."

* * * *

This and very much more is the work of the "Y" in America. It gives an opportunity for men who have fought their way up and have gained experience and wisdom, and developed a value to the community far beyond the average—it gives these men an opportunity to preserve themselves for the use of the body politic. Many of these men should have violent hands laid on them by the public and be compelled to take care of themselves, because they have too great a value to be prematurely lost to the world.



# Home Economics

**Conducted by LENNA FRANCES COOPER, B. S.**

Dean, School of Home Economics, Battle Creek Sanitarium

# The Sugar Situation

Some time ago the president decided not to exercise his war-time authority over the sugar situation by purchasing the Cuban crop for 1920. Some have felt that this authority should still have been exercised, in order to secure the benefit of a lower price on sugar. However, this is probably because the understanding of the situation is not general.

The Equalization Board has had no contract with the Western beet sugar or Louisiana cane sugar producers. The law which made it possible for the Equalization Board to act limits the control over domestic sugars to June 30th, 1920. Had the Board purchased the 1920 Cuban crop, it would have found itself in the position of trying to maintain a uniform, reasonable price, with no control over the sugars that might come from Hawaii, Porto Rico, Louisiana and all Western sources after the 30th of June. The Board was able to deal with the unified Cuban agency for the entire 1919 crop, but there is now no such organization, so that they would have been compelled to buy from individual producers in the Cuban market, which undoubtedly would have had a tendency to strengthen the market and further increase the price.

Present indications, are, however, that more sugar will be available for consumption in the United States than had heretofore been expected. This is because the European nations have found themselves financially unable to purchase as large a proportion of the Cuban sugar as it was expected they would buy, and the United States seems to be the next most eager purchaser. It is, therefore, expected that larger quantities of sugar will be available for distribution, particularly through the months of March and April, and that undoubtedly prices will automatically be reduced.

The demand for sugar brings to mind a contrast between conditions of the present day and those of one hundred years ago, at which time sugar was a very scarce article and considered in the light of a luxury. Granulated sugar was unknown at that time. Sugar could be bought in loaf or lump form, and the purchaser broke it up for use in the household. Soon after the arrival of the Dutch on Manhattan Island a sugar refinery was built on Liberty Street, and remained an important manufacturing establishment for a century and a half. Later on, it was discovered that a water front was a very much more economical place for conducting a refinery and, consequently, all refineries are now located where they have easy access to water transportation.

Refining consists of converting raw sugar into refined grades. There is, of course, some loss of sugar in this process, but the amount lost now is very small compared to a hundred years ago. Today the refiner obtains 93-94 pounds of refined sugar from 100 pounds of raw sugar, whereas a century ago 50 pounds of refined sugar was all that could be expected from 100 pounds of raw material.

The refining process consists of melting, clarifying, filtering and crystallizing by means of boiling. These processes represent some twenty or thirty steps. "Formerly the melting was done in a large, open kettle or copper boiler, the filtering accomplished by straining through blankets, and the clarifying by the use of bullock's blood, albumen and clay. A hundred years ago no centrifugal or granulating machine was in operation, and sugar was run into molds and baked in ovens heated to the proper temperature. The invention of the centrifugal machine and modern granulator has made granulated sugar possible. In the former, centrifugal force throws the molasses free and leaves the white granulated sugar. The combination granulator and drier, as the name implies, dries the sugar and screens it."

The amount of sugar consumed in the United States runs into figures that are almost incomprehensible. In 1919 we consumed over nine billion pounds of sugar, or slightly more than four million five hundred thousand tons, making an average of ninety-two pounds per capita per year as against a consumption of eighty-five pounds per capita per year for pre-war times. The steady increase in the consumption of this article is evidenced by the following table taken from the *Weekly News Letter* of January 21, 1920:

| Year | Pounds |
|---|---|
| 1866-1875 | 35 |
| 1876-1885 | 42 |
| 1886-1895 | 57 |
| 1896-1905 | 67 |
| 1906-1914 | 81 |

One is justified in stopping to ponder over the effects of this increased consumption of a food article which represents 100% concentration, and 100% carbohydrate. On account of the thorough refining process this product is practically 100% pure, which means that it has been deprived of all mineral salts and other natural food-stuffs that were found along with it in the plant in which it was formed. There is no question but that the majority of people need more carbohydrate in their diet than they are prone to get in an ordinary American dietary, but there is considerable question as to whether or not this concentrated form is the best way in which to take it. Ninety-two pounds per capita per year means an average daily consumption of more than one-half of a measuring cup.

Brandl, experimenting upon dogs a few years ago, found that a 6% solution of sugar placed in a dog's stomach, through a tube, produced almost no noticeable effects, while a 10% solution produced a decided irritation of the mucous membrane of the stomach, and 20% produced a very pronounced reaction, almost causing gastritis.

This experiment would indicate that sugar used in the less concentrated forms may not be objectionable, while the more concentrated forms, such as candy, preserves and the like may produce decidedly irritating effects. The medical profession, from observations made of patients, are quite well agreed that there is grave danger from excessive use of sugar, particularly the commercial types of sugar. There are several other natural sugars which have an equal food value with that of the commercial, or cane sugar. The simple sugars which are found in practically all fruits and many of the vegetables, namely, levulose and glucose, more familarly known as fruit sugar and grape sugar, are much less irritating and are found in the common foods in a lesser degree of concentration than ordinary sugar. Lactose, or milk sugar, found in milk, also the malt sugars, known scientifically as maltose, have an equal value with cane sugar but are less sweet and irritating than the granulated sugar.

# Women Must Reduce the H. C. L.

EDNA NEIGHBORS

At a recent meeting in Chicago called by the governor of Illinois, a plea was specifically directed to the women of the country for assistance in the reduction of the high cost of living. Attorney General Palmer was present at this meeting and in a few pertinent words laid a platform for bringing down the high cost of living. This platform consisted of five planks: "First, there should be a fair-price committee in every town and county, backed by official authority; secondly, an organization of women to refuse buying anything but actual necessities until prices are brought down; thirdly, conservation and economy meetings everywhere, under auspices of civil bodies; fourthly, influences of prosecuting authority to prevent industrial disturbances and bring about peace in industry; and fifthly, remobilization of 'four-minute men' to preach the work-and-save doctrine throughout the country." He further declared that the notable factors primarily involved in the high cost of living are increase in production, the elimination of extravagant buying, and the determined hunting down of profiteers of all classes.

Again, as in many instances of suggested relief for public ailments, we have the wonderful remedy without, thus far, any one to attend to the rigid application thereof. A very simple matter it is for any person, more or less in touch with public affairs, to partially fix the cause and offer a cure for a condition which is driving men and women, even children in some cases, to the limit of their endurance. Notwithstanding the agitation about the matter of the reduction of actual living expenses by persons responsible in a measure for existing conditions, save for the legislation regarding profiteering and actual prosecution in a few cases, prices have remained fixed, and practically nothing has been accomplished, though it is encouraging that prices have not soared.

The enrollment of approximately 4,000,000 housewives in the interests of the fight is propitious. May we not hope for far-reaching results eventually? Profiteering, political situations, the upset in export trade brought about by the recent war, diminished production, "public profligacy," and extravagance have each given a lift to prices asked for the necessities of life; but are not we—the people—never daring a boycott of the most unnecessary high-priced commodities, largely responsible for the present distressing conditions?

Serious problems, too, present themselves with the consideration of boycott of any commodity, however useless. What appears to be a fair refutation of Mr. Palmer's advice at the conference, calling for a less extravagant spending on the part of every one, is given in one of our best newspapers: "The merchants who have bought goods with the expectation of selling them would have their stocks on their hands; the notes they have given in payment would remain unpaid; the banks that have discounted the notes would clamor for their money; the stores would close or greatly reduce their activity; and thousands of persons would be thrown out of employment, not only employes of stores, but of mills and factories; for the demand of goods having stopped or been greatly reduced, the manufacturing would cease or be curtailed." The interrelationship of producer and consumer is certainly most obvious. "Live and let live" is no mean viewpoint of life, though is there not possibly an adjustment without suffering and privation following? Can any of us feel that the average wage—even though it compares fabulously with that of three years ago—paid to the average wage-earner adequate for current expenses where a family must be provided for, children kept in school, well clad and well nourished, and the health of parents safeguarded? As a protection to our future national life, relief is imperative. If the strain upon the masses is not relieved, nerves will be shattered, vitality sapped, general endurance lessened. The high cost of living can indirectly scatter over our country a large class of helpless persons—helpless not only financially, but physically, at an age when they should be at their prime.

To return to the gist of the Chicago conference, it is the women of our country who are being enlisted in the drive for actual results. With their enthusiasm well directed, untold adjustments are possible. Women as a class are perhaps more to blame for wholesale extravagance than men; and this spirit of extravagance, the don't-care-ness for the price of any article so long as it satisfies a whim, is no doubt directly responsible as much as any other one factor for the present high cost of the simplest living. Women, too, are sheep-like in one respect—a leader sets the pace, and the rest follow. How truly great would it be to have the pace set in this fight by those most capable of the initiative, by those who have striven and succeeded grandly, for example, in the fight for prohibition. Results may be long in attainment. Often the things most worth while are difficult of possession, but the combined efforts of all women means the winning of the fight in reducing the high cost of living.

The post-war reactionary forces have worked overtime toward the present conditions. We patriotically practiced self-denial during the war, but now the time has come for full expansion. That is the idea; but is it a beneficent one? We do not desire a nation of misers, but is it conducive to the good morale of our American people to encourage the reckless extravagance of the present? If this general accusation is doubted, a few questions directed to any jeweler, for example, and answered truthfully as to his business during the past holiday season will be disillusioning. True it is we have moneyed people able to indulge in untold extravagance; but strange to say, it is not those who do the most buying. The situation would be much less alarming, were it the well-to-do who disburse their funds so freely. Comforts for that inevitable rainy day are usually secure to them. The ban justly belongs on the newly prosperous, who have little or no thought for those less fortunate, materially, than themselves.

When people offer no resistance to high prices, when, in fact, they encourage them, and court them, and resent being shown anything that is not the best and the highest-priced, how in the world are prices going to be brought down.

# Unfermented Bread

Unfermented breads are made light by the process of aeration—the incorporation of air or gas into the mixture by means of kneading and beating, or by chemicals.

The lightness of aerated breads depends upon the coldness of the materials, the dexterity with which the ingredients are put together, the quality of the materials, the heat of the irons and ovens, and the filling of the irons. The gem irons are better for aerated products than tins. Since all gases expand when heated, it is necessary that the materials be as cold as possible. The materials should be put together quickly and lightly, and must be beaten—not stirred. The ovens must be only moderately hot. The gem irons must be filled to the very brim, and must be warmed before filling.

The chemicals used always consist of the combination of baking soda (sodium bicarbonate) and an acid. The acid may be cream of tartar, tartaric acid, an acid phosphate, lactic acid of sour milk, hydrochloric acid, the acids of fruits and molasses, or alum compounds. Baking powders are always combinations of soda and an acid, and are of three classes: cream of tartar, acid phosphate and alum. The alum powders are cheap and unwholesome. The result of the combination of the soda with the acid is the formation of carbon dioxide gas and a salt, the kind of salt depending upon the acid used. For instance, soda and cream of tartar produce Rochelle salts, soda and an acid prosphate produce sodium neutral phosphate, while soda and hydrochloric acid produce sodium chloride—common table salt.

The salts produced by the three types of baking powders are all saline cathartics. The Referee Board of Consulting Scientific Experts appointed by the United States Department of Agriculture, in a report on baking powders, warn that "it is wise to be moderate in the use of foods that are leavened with baking powders." One member of the Board further says, "Prolonged administration of saline cathartics, even in small doses, tends to leave behind a condition of constipation."

On account of the salts produced as the result of the combination of chemicals in baking powders, they are not to be recommended to those seeking the purest and best in foods.

The salts produced by the combination of soda and hydrochloric acid is undoubtedly the least objectionable of any of the salts produced, but great care must be exercised in the use of the hydrochloric acid, as, uncombined, it is a poison. On account of the degree of concentration, it is capable of removing the skin or mucus lining with which it comes in contact, hence its use must never be entrusted to ignorant or careless persons. It is very important that the measurements of both soda and hydrochloric acid shall be exact, in order that they may be perfectly neutralized. It is advisable, when using hydrochloric acid, to have a minim glass, which can be purchased for a small sum at any drug-store. One perfectly level teaspoon of soda is neutralized by eighty minims of hydrochloric acid. The hydrochloric acid must be chemically pure, (marked C. P.) and in the concentrated form. One teaspoon of soda and eighty minims of hydrochloric acid are equivalent to four level teaspoons of baking powder.

The equivalent in baking powder is given in each recipe calling for soda and hydrochloric acid, as there may be occasions when the housewife will find it necessary to entrust the preparation of the meals to inexperienced persons; but whenever possible it is recommended that the hydrochloric acid and soda be used in place of baking powder.

For most recipes one-half teaspoon soda and forty minims hydrochloric acid are sufficient to use with one cup of flour.

## Aerated Whole Wheat Puffs

| | |
|---|---|
| 1 egg | 1⅓ cups white flour |
| ½ cup thin cream | ⅔ cup whole wheat flour |
| 1 cup milk | 2 teaspoons salt |

Beat the egg yolk until light and lemon colored; add the milk, cream, and salt; sift the flour, stir in a little at a time, beating vigorously while so doing, and continue the beating for five or ten minutes. Beat the egg-white until stiff and fold into the batter. Turn into hot, buttered gem irons, filling the irons to the level. Bake in a moderate oven about twenty minutes. This recipe may be varied by using graham flour instead of whole wheat, or by using the white flour alone.

## Aerated Nut Puffs

1 egg
1 teaspoon salt
⅓ cup cream
⅔ cup milk
1½ cups white flour
¼ cup chopped nuts

Beat the egg slightly, add the milk, cream, and salt. Dredge the nuts in a part of the flour and add the remainder of the flour to the egg and milk. Beat about five minutes, or until the batter is light and smooth, and fold in the chopped nuts. Put into hot, buttered gem irons, taking care to fill the cups to the level. Bake in a moderate oven about twenty minutes.

Currants, raisins or chopped dates may be used instead of the nuts.

## Corn Pones

1 pint corn meal
1¼ cups boiling water
1 teaspoon sugar
½ teaspoon salt
1½ tablespoons butter

Dissolve the sugar and the salt in the water; mix the butter with the cornmeal, then add the boiling water; cover and let stand ten minutes; shape into oblong cakes two and one-half inches long; bake in a quick oven twenty or thirty minutes.

## Bran and Graham Biscuit

1 cup sterilized bran
2 cups graham flour
1 cup milk
1 egg
1 teaspoon salt
2 tablespoons butter
1 teaspoon soda
80 minims hydrochloric acid (C. P.)

(This amount of soda and hydrochloric acid is equivalent to four teaspoons baking powder.)

Mix the flour, bran, sugar and salt together. Beat the egg slightly and add to the milk. Dissolve the soda in the milk and add the melted butter, then the hydrochloric acid. Turn very quickly into the dry ingredients. Mix lightly but quickly. Turn upon a molding board and shape with a biscuit cutter. Bake fifteen to twenty minutes in a hot oven.

If baking powder is used, omit the hydrochoric acid and the soda and proceed as follows: Mix the dry ingredients together, beat the egg slightly and add to the milk. Stir the liquids into the dry ingredients. Turn out upon a slightly floured molding board and roll to one-half inch in thickness. Cut into shape with the biscuit cutter and bake in a hot oven.

## Oaten Cakes

2 cups oatmeal
1 cup white flour
½ teaspoon salt
3 tablespoons butter
½ cup or more of cold water

Mix the flour, salt and steel cut oatmeal and chop in the butter. Mix with cold water into a stiff dough. Knead, and roll into very thin cakes. Roll out into as round a piece as possible, trim and cut circle into quarters. Bake in the toasting oven directly under, but not too near the flame, when the upper side is brown turn and bake until nicely browned on both sides. This is the Scotch oaten cake which is said to have produced the brawn of the Scottish people.

## Rice Muffins

2¼ cups flour
¾ cup hot cooked rice
2 tbsp. melted butter
2 tbsp. sugar
1 cup milk
1 egg
½ teaspoon salt
1¼ teaspoon soda
100 minims hydrochloric acid (C. P.)

(This amount of soda and hydrochloric acid is equivalent to five teaspoons of baking powder.)

Mix and sift the flour, sugar and salt together. Divide the dry ingredients, and sift the soda wth one-half of them. Beat the egg, add the milk and the half of the dry ingredients which do not contain the soda. Add the hydrochloric acid. Mix thoroughly and stir in the remainder of the dry ingredients. Add the butter and fold in the rice. (It will take a scant one-fourth cup of raw rice to make three-fourths cup of boiled rice.) Turn into buttered gem pans and bake in a quick oven twenty to thirty minutes.

If the baking powder is used, omit the soda and hydrochloric acid and sift all of the dry ingredients together. Beat the egg, add the milk and stir in the dry ingredients and proceed as above directed.

### Bran Gems

1 cup sterilized bran
1 cup graham flour
⅞ cup milk
3 tbsp. melted butter
1 teaspoon salt
1 egg
1 tablespoon sugar
¾ teaspoon soda
60 minims hydrochloric acid (C. P.)

(This amount of soda and hydrochloric acid is equivalent to three teaspoons of baking powder.)

Mix the bran, flour, salt and sugar together. Beat the egg, add the milk and one-half of the dry ingredients. Stir in the hydrochloric acid. Mix well, and add the melted butter. Sift the soda with the remaining half of the dry ingredients and stir into the batter. Turn into buttered muffin pans and bake in a hot oven twenty to thirty minutes.

If baking powder is used, sift it with the dry ingredients and omit the hydrochloric acid and the soda. Add all of the dry ingredients at once and stir in the melted butter.

### Popovers

1 cup flour
1 cup milk
1 egg
½ teaspoon salt

Mix the flour, milk and salt to a smooth batter; add the unbeaten egg and beat the whole vigorously for five minutes. Pour the batter into well-greased popover cups and bake until big, inflated bubbles swell up over the cups, which will require about forty-five minutes.

## Recipes

### Apricot Tapioca

¼ c. tapioca
2 c. water
1 c. canned apricots sliced
2 tbsp. melted butter
3 tbsp. lemon juice
¼ tsp. nutmeg
¼ tsp. cinnamon
½ c. sugar
1 c. whipped cream

Cook tapioca in the water until transparent. Mix the remaining ingredients together, add the tapioca and pour into an oiled baking dish and bake about 20 minutes. Serve with whipped cream on top.

### Spinach, French Style

1 c. cooked spinach
2 tbsp. butter
⅔ c. savora broth
1 tsp. sugar
1½ tbsp. flour
½ tsp. salt
1 tsp. lemon juice
Nutmeg

Make a sauce by combining the butter and flour together, add savora broth slowly, sugar, lemon juice and nutmeg. Cook until slightly thickened. Add to the hot cooked spinach and serve.

### Celery and Egg Salad

2 hard cooked eggs
1½ c. diced celery
¼ c. French dressing
¼ c. cooked mayonnaise

Dice the eggs and mix with the celery and French dressing. Serve on a bed of lettuce and top with the cooked mayonnaise.

### Wheat Brose

½ c. cream of wheat
½ c. bran
3 c. water
Salt

Bring the water to the boiling point, add salt, the cream of wheat, slowly, then the bran. Cook in double boiler about thirty minutes.

### Scalloped Okra and Tomatoes

2 c. canned okra diced
2 c. stewed tomatoes
1⅔ c. boiled rice
6 tbsp. butter
¼ c. bread crumbs
Salt

Place alternate layers of okra, tomatoes and rice in an oiled baking dish. Season each layer with salt and butter. Sprinkle the top with buttered bread crumbs and bake.

### Maple Syrup Cake

½ c. butter
½ c. sugar
2 eggs
1 c. maple syrup
2½ c. flour
2 tsp. baking powder
¾ tsp. soda
½ c. hot water

Cream the butter, add sugar slowly, add well beaten eggs and maple syrup. Sift all the dry ingredients together and add, alternating with the water. Bake in moderate oven in two layers or in a sheet. Cover with caramel frosting.

# Child Welfare

Conducted by MRS. E. E. KELLOGG

# The Nervous Child

One of the most common queries which comes to us from perplexed mothers is what may be done for the nervous child. Possibly the following sugestions may be found helpful.

Few mothers have more than a vague understanding of the complex and varied workings of that marvelous system of brain and nerves which governs the child's body. This lack of knowledge results in a lack of hygienic care. The outcome is that derangements of the nervous system, in one form or another, are fast becoming one of the problems of child life.

## Nervous System Excitable

The nervous system of the young child is both structurally and functionally immature. Consequently it is more excitable, more unstable, and under more feeble control than in later life.

One plainly recognizes the immaturity and weakness of the baby's muscular organism. At the same time we often fail to consider the very great number of impressions a child's brain must receive in order to comprehend what is going on about him. Thoughtless friends who love to see the child manifest precocity often do the little one much injury. They constantly attract his attention. He is shaken and punched and tickled to make him laugh, and is talked to until his brain is bewildered and weary—just to see how cunningly he responds. Indeed, in many cases he is is treated much as if he were a puppet, his sole business to perform at the call of his admirers.

The custom common with some parents of tossing the infant in the air while he screams, both with fear and delight, is one fraught with danger. A physician of large experience relates an incident of a bright little one whose doting grandfather was accustomed thus to play with it every evening. "The child trembled with delight when the night's frolic was over, but one evening from this trembling it passed into a spasm, the first indication of one of those serious brain diseases against which medical science is often helpless."

## Don't Toss the Child

A child is more largely made of nerves than is the adult, since the proportion of its nervous system to the rest of the body is considerably greater in infancy than in full maturity. The development of the brain and nervous system throughout infancy and childhood is also more rapid in proportion than is that of other parts of the body. There is so much for him to see and learn in this wonderful world that his mind is of necessity very active. The task in hand is to teach him right control and exercise of this marvelous faculty.

Some nervous children at a very early age manifest brilliant talents which their proud parents stimulate and encourage by every means within their power. Others quite the opposite in mental ability are likewise pushed and urged beyond their normal resources in an effort to make them attain the standard of their better equipped companions. In either case the forcing is injurious.

## Let the Child's Brain Develop Naturally

The child's brain should take a normal course of development. To this end the little one must live a simple, normal life, untrammeled by the exactions of society, carefully nourished with abundant, plain food and afforded ample exercise, amid good hygienic environments.

A writer of eminence has said that "the proud mother and over zealous nurse commence the process of mental cramming even before infancy has passed into childhood. From this time on children are daily being taught, apparently with the idea of destroying their childhood and making of them little men and women. And this unphysiological process is not infrequently a factor in the production of nervous disorders.

"Mothers must be told that early precocity is an abnormal condition in the infant, which if unduly encouraged may result in disease and permanent mental impairment. They must be told that vegetating is the ideal life of infancy and early childhood.

## Plenty of Sleep

"Look well to their physical development. If possible, a large portion of the year should be spent in the country away from the clamor and excitement of city life. In the country also the child can have a certain amount of solitude, the importance of which can scarcely be over-estimated in growing independence of thought and character to the future man."

Plenty of sleep is also especially important to the child inclined to nervousness. He should have his sleep regularly, and in amount to insure proper recuperation of his body.

The child should be taught to go quietly to sleep when made comfortable in his bed, without rocking or carrying in arms. Care must be taken to provide a comfortable bed and to supply abundant fresh air, quiet and other favorable conditions.

It is an excellent plan to insist that the child take a rest period during the daytime, just before dinner, even after he has outgrown the baby need of a daytime nap.

In the warm season this rest hour may be taken out-of-doors in a hammock or lying upon the grass in some cool, shady place where it can be made a period of complete relaxation.

## Night Terrors

The unreasoning fears and terrors which sometimes affright the nervous child at night should be dealt with in compassionate and tender sympathy, not only to afford the child comfort, but to lessen the harmful reactions upon his nervous system.

In such cases it is often better to leave a shaded light in the sleeping room. To the child's distorted imagination, even the darkness assumes terrifying shapes. A light enables him to distinguish between the fantasies of his brain and the reality.

The bed-time story, if one be told the child, should be simple and tranquil in character. Filling young minds with exciting themes predisposes to disturbed sleep.

## Diet

It is especially essential that the diet of the nervous child be well regulated. Indigestion disorders the brain with the rest of the body. Many exhibitions of nervousness, irritability and bad temper are wholly due to mistakes in feeding. Correction of the child's diet, a matter generally within the province of the mother, is therefore of the utmost importance.

A tendency to nervousness is very often an inherited one. The mother's mental state before its birth leaves its impress upon the child. If the mother herself be lacking in self-restraint, then in addition to his inheritance the little one is likely also to have before him the example of daily, perhaps hourly, exhibitions of uncontrol. What the child most frequently sees and hears—in other words, the atmosphere in which he dwells—shapes his own life to a greater or lesser degree. Nervous parents are poorly fitted to exercise that firmness and gentleness which should characterize the discipline of nervous children.

So many and varied are the causes leading to nervousness that only a specialist may hope to compass them; but every mother may be on guard to prevent and counteract the influences which play havoc with the nervous systems of children by letting them live the simple life throughout their years of development.

# Emancipation of the Balkan Baby

"Let the baby kick" is the text of almost all that is being preached by American Red Cross doctors and nurses to native mothers in Albania.

That mothers anywhere should wish to confine their infants and restrain the healthy impulses of growing babyhood, seems impossible in this day and age, and yet American Red Cross doctors in Albania find the practice of strapping babies tightly to cradles the greatest menace to the health of the rising generation.

You must not blame Marya if she is frightened when she sees her baby stretch his tiny legs and kick. The theory of growth through exercise is a new one to her. Her mother and her grandmother and her great-great-grandmothers further back than history records, all strapped their babies to a cradle swung from the mother's back, believing that this stiffened and strengthened the children's spines. As a result, a large percentage of the children today are crippled or have diseases induced by being kept in a cramped position for weeks at a time.

When the American Red Cross opened its new baby hospital recently at Elbasan, more than two hundred sick babies were brought in from all parts of Albania, mostly from the mountains, where their parents could not procure even the crudest kind of medical attention. They were suffering from a variety of diseases, many of them due to lack of soap; but by far the largest number of these children were partly crippled from the old binding custom.

It is a pleasing commentary on the innate wisdom of motherhood that these ignorant peasants are willing to adopt the strange American way as soon as they see its benefits. The bringing of two hundred sick babies to the hospital at its inception meant sacrifice and fatigue untold, for many of the mothers were obliged to tramp over mountains for ten days, with their ailing infants strapped to their backs.

The new institution is the first children's hospital in Albania, and is in charge of Dr. Ruth A. Guy, of New York City. Its inauguration was preceded by an "anti-swaddling" campaign, carried on at Scutari and Tirana, the two largest towns in Albania, for more than a year by Dr. Lulu Hunt Peters, of Los Angeles, who is in charge of the two general hospitals in these places. She has special wards for babies in these hospitals, and all the mothers who bring their babies are instructed in the proper care of their children.

The mutilation resulting from binding has been blazed forth from posters, shouted in helpful talks to mothers, and taught by every other means within the reach of Lieut.-Col. William Warfield of Baltimore, American Red Cross Commissioner to Albania. In time, all Albanian infants will have a fighting chance for strong, robust

Albanian babies flourish under the Red Cross regime of exercise and bathing. Lack of soap has been responsible for much of the disease in the baby maladies treated at the hospital of Elbasan, Albania.

bodies. The hospital at Elbasan will not only care for two hundred sick babies but will contain also an infant clinic, where the work of education will be carried on by Dr. Guy and her assistants indefinitely.

Dietetics is a branch of baby welfare in which Albanian mothers will learn something from America. It is their custom to nurse their babies up to the age of two years, and then give them a coarse diet of maize bread, sour goat's milk and cucumbers. In the majority of families one finds that from one to five have died anywhere between the ages of one to five years. The mothers in these cases have been totally ignorant of the reason for the appalling death-rate in their families, and indeed seem seldom to have given the matter any serious thought.

In matters of child welfare, Serbian babies also are helping to educate their mothers from the old straight-jacket mode, for this baby binding is characteristic of most of the Balkan countries. At Cuprija, Serbia, a large ward has been set apart where mothers and their newly arrived infants are kept together for two or three days while the nurse gives the mothers instructions as to washing, dressing and caring for her children.

The babies brought in are wrapped in burlap, with ropes tightly tied around them, to keep their arms and legs straight. When they are unwrapped, the rope often has cut into their flesh, the knot at the back sometimes making terrible sores.

When the youngster is first bathed and put into a little nightgown and allowed to kick, the mother, frightened by these strange new customs, will often steal in and start to bind the arms and legs again.

After two nights of emancipation, the baby himself becomes an advocate of the new idea, and screams lustily whenever the mother tries to tie him up.

The first maternity case at the hospital created much excitement, as it is against the old Serbian custom for male surgeons to handle such cases. But the Red Cross doctors notified the Prefect that they would accept cases of this nature, and asked that they be sent. The result has been a great saving of life and an advance in the whole standard of infant welfare in Northern Serbia.

It is not easy to get about in any of the Balkan countries. The terrain, as the A. E. F. would say, accounts for much of the backwardness of medical science there.

When the Red Cross started a campaign for dental hygiene, a motorized dental clinic was started on a tour of the little villages, clinging tenaciously to the rocky heights of several of the little mountainous countries. But there are spots so inaccessible that none but the sure foot of the burro can tread them safely, and a new departure, the donkey-ambulance, was born.

Riding astride a donkey is the smoothest and easiest mode of transportation, and in a country that boasts few roads, it is frequently the only mode of getting patients to the hospital or clinic.

American Red Cross Nurses at Tirana, Albania, unloading a patient from the mountain ambulance of the hillmen—a donkey. This is the smoothest mode of transportation in this rocky country, and patients often are transported on mule-back many miles to the Red Cross hospitals.

# MEDICAL PROGRESS

# The New Physiology of the Alimentary Tract

Professor Keith, the eminent English anatomist, divides the alimentary canal up into a number of neuro-muscular sections, each section being cut off from its neighbor by a sphincter which effectively blocks the passage of contraction waves and prevents their spreading from one section into the next. As in the heart, probably each section is provided with a special centre or "pace-maker," where the impulse arises that starts the rhythm of that section. Four of these centres are actually known.

He has likened the alimentary tract to a railroad divided into block sections, each provided with its signalman and telephonic apparatus. The signalman of one section refuses to accept any further traffic until his section is clear; all the sections are closely correlated, if one is blocked the others too become automatically blocked. He divides the sections as follows:

"1. The pharyngeal section, ending in a sphincter at the upper end of the esophagus.

"2. The cardiac sphincter marks the end of the esophageal section, and just beyond it lies some nodal tissue which acts as the pace-maker for the movements of the stomach.

"3. The gastric section ends at the pylorus, but the pace-maker for the duodenal section is not reached until just above the entrance of the bile-duct. This fact is interesting in view of the close functional and pathological relations between the stomach and the acid area of the duodenum.

"4. The duodeno-jejunal junction is marked by another sphincter, with its special nerve-supply. There are three peritoneal bands lying to the right of the duodeno-jejunal flexure, each containing a branch of the vaga and splanchnic fibers going to this and the next two sphincters.

"5. The ileo-cecal valve is really provided with a long sphincter immediately above it, as shown some years ago by Elliot. This is supplied by the second branch.

"6. There is a sphincter with the third of these special nerve supplies in that part of the transverse colon which lies below the pylorus. This marks the end of the part of the colon in which anti-peristaltic waves may occur.

"7. At the junction of the pelvic colon with the rectum is another sphincter. This corresponds with the point at which the intestinal contents are held up in a normal person. As soon as the feces pass beyond this point, the defecation reflex should be excited; if this is neglected, the rectum may become unduly tolerant of the presence of feces, with resulting atony of the rectum, as in one common and troublesome type of constipation.

"8. Finally, the alimentary tract is closed by the anal sphincters.

"This conception of the alimentary tract explains, as we shall see, many of the observed disturbances of the mechanical side of digestion. An irritable focus in any section disturbs the onward progress of the food, by causing a spasm of the sphincter immediately above, and often indirectly of sphincters some segments higher up."

# Vitamins

Funk's discovery of vitamins has led to most interesting results. It is now known that beri-beri, scurvy, pellagra, and possibly rickets and several other diseases of malnutrition are due to deficiency of the subtle elements to which Funk has applied the name, "vitamin."

Thousands of persons suffer from these maladies every year. Probably many of the sufferers are treated for other maladies, the real cause being overlooked. In certain of the Southern States, pellagra has developed to such an extent that it has come to be one of the largest factors in the mortality rate. Many investigations are in progress for the purpose of determining the content of vitamins in different foodstuffs and the nature and action of these remarkable products.

E. Madsen, of Copenhagen, has recently published an interesting paper upon the subject of vitamins, an abstract of which appears in the *Journal of the A. M. A.*, from which we quote as follows:

"Among the practical points emphasized by Madsen is that a nursing mother must have food rich in vitamins. The lack of them may be responsible for certain pregnancy disturbances, such as uncontrollable vomiting, distaste for food, etc. As rachitis (rickets) develops principally in the artificially fed, the lack of vitamins in the cow's milk or their destruction by boiling the milk, seems a plausible factor in rickets. We do not yet know whether the scarlet fever virus, for example, survives moderate pasteurization. If the milk has to be sterilized during an epidemic, provision should always be made for supplying vitamins in some other form, orange juice for young infants; potato purée or egg yolk for older children. In digestive troubles, we must beware of not letting the diet get too poor in vitamins, as diet that makes little demands on the digestive organs is generally poor in vitamins. Drying also destroys vitamins in fruits, vegetables, etc. This explains why an anti-diarrhetic diet keeps the patient so languid. The tea, rice water, etc., are peculiarly poor in vitamins, and special measures are necessary to correct this. A surplus of vitamins reduces the calory demand. Tagaki found that the men in the Japanese fleet gained in weight when the rations were modified to include more vitamins, although it represented fewer calories. In the Danish prisons, when the bread ration was reduced and barley porridge given instead, the men gained in weight. Barley is richer in vitamins than rye and wheat."

Madsen warns that a lack of appetite is often the first symptom from a deficit in vitamins. He thinks there is much to suggest that a vitamin deficit is a factor in chlorosis anemia, neurasthenia, vasomotor disturbances, etc. In fevers, convalescence, etc., the necessity for an ample vitamin supply is imperative. It is possible that the mysterious benefit from cod liver oil may be due to an exceptional vitamin content. The commercial infant foods on the market are completely free from vitamins, and they must be added from some other source. In institutions where the food is cooked in large portions at a time, there is liable to be a deficit in vitamins.

"There is no doubt," he adds, that beriberi occurs much more commonly in all countries than has been hitherto appreciated, but it is not recognized, as no one looks for it outside the tropics. The war edema without albuminuria may be a rudimentary form of beri-beri. It is possible that this may be true also of many cases of peripheral neuritis and heart weakness." Among the peculiarly vitamin-rich foods he lists butter and cheese, egg yolk, raw meat and fresh meat juice and soup. Steamed meat and fish retain their vitamins better than when boiled. Meat extracts are free from vitamins. In grains they occur in a series, with rice at the lowest and barley at the highest point; in rice the vitamin occurs only in the hull, in barley in both hull and kernel. The finer the flour is bolted, the less the proportion of vitamins in it. Legumes and potatoes are rich in vitamins, but they pass mostly into the water in which they are boiled, so this water should be used in the preparation of the food. Dried and cooked vegetables have no vitamins. Fresh fruit is rich in vitamins, and in the acid fruits they seem to be especially thermostable. It is still undecided whether wine and oil contain vitamins."

# The Protective Action of Colors

The *Scientific American Supplement* summarizes the following interesting facts on the protection to life against radiation afforded by color:

"The well-known French naturalist, Mr. J. Dufrénoy, of the Biological Station at Arcachon, is an authority upon the function of color in living creatures. This function is twofold: In the first place, it protects living protoplasms and biochemical agents against an excess of radiation, especially against the ultra-violet or actinic rays; and secondly, it transforms solar energy so as to make it utilizable by the organism. In a recent article in the *Revue Générale de Sciences*, he gives some interesting examples of such utilization of color as follows:

" '1. Among animals the pigmentation of the coat bears a direct relation to the degree of illumination present in the environment, but even among polar animals, whose skin is uniformly white, it takes on a deeper color in the vicinity of the generative and sensory organs. The Russian greyhounds, which course over vast steppes, under a burning sun, have no dark pigment except in the muzzle, the ears, the eyes and the surrounding skin.

" '2. Among plants the anthocyanines have only a secondary protective rôle, since they do not appear until autumn, when there has been a decrease in the intensity of light; it is mainly the flavones which protect the organs by arresting the ultra-violet rays at the periphery of the plant. The derivatives of the flavones, which are exceedingly common in plants, are found in the yellow coloring matters of the cellular juice and in solution in the cellular juice of the epidermis and the adjoining tissues. Their protective rôle can be deduced from their special abundance in tropical plants and those in the mountainous regions. The aerial parts of plants which grow on the upper slopes of mountains are generally richer in flavones than those of plants grown on the plains, and when mountain plants are cultivated on plains they lose their richness in flavones. Anthocyanines and flavones supplement each other in their protective action, the former protecting flowers of vivid color and the latter acting as a screen in the case of white or yellow flowers.

" '3. Deciduous green leaves which turn red in the autumn contain a considerable proportion of flavones. The anthocyanines in leaves proceed from the reduction of the flavones at the end of the vegetative period; Combes, in fact, succeeded in 1913 in producing the anthocyanine of red leaves synthetically, by reduction of the corresponding compound or flavone of green leaves. Reciprocally, the yellow pigment (flavone) of the green leaves of the five-leaved ivy can be obtained experimentally outside the organism by the oxidation of the red pigment found in autumn leaves. The anthocyanines seem to be formed also by the oxidation of colorless chromogenes. Few plants are entirely lacking in chromogenes, but the formation of pigment or the noncoloration of the flower depend upon the degree of hydration; if we extract water from the tissues the activity of the oxydase is reduced and that of the reducer is increased; in other words, the formation of pigment is arrested, and the existing pigment is reduced to a chromogene and the flower becomes colorless. If, on the other hand, water be supplied to the colorless tissues the activity of the oxydase will be resumed, the chromogenes will be oxydised and pigments will be produced. These facts can be observed in Nature; in a field of buckwheat, for example, half of which was irrigated, the other half being dry, the eaves of the irrigated plants turned red ten days earlier than those of the dry plants.

" '4. The solar energy absorbed by the pigments is largely converted into heat. In January at Arachon, on a fine day, the temperature of the plants exposed to the sun exceeds that of the air by from 6 to 8° C. at noon, and by from 12 to 15° C. at 3 P. M.; the amount of this rise in temperaure varies according to the color and to he intensity of the pigmentation, so that a difference of more than one degree Centigrade may exist between the yellow and the green leaves of the variegated foliage of a spindle tree, or even between the two borders of a single variegated leaf.

" 'Experiments made in January at Arcachon gave the following results:

" 'In a variegated leaf of the *Iris pallida*, the green portion showed a rise in temperature of 9.8° C. over that of the air against a rise of only 8.5° C. in the yellow portion. . . .

" 'Finally experiments were made with grapes of various colors placed in sunshine and in shade. The temperature of the red grapes in the sun was 37° C. and 10° C. less in the shade; that of white, green and amber-colored grapes was 34° C. in the sun and 26° C. in the shade. The time of this last experiment was Oct. 10, at 3 P. M., the temperature of the air being 24° C. in the shade. A second experiment showed that grapes with a dull surface had a temperature of 35.5° C. in the sun, whereas that of those with a bright surface was 34.8° C.

" 'A highly interesting fact is that every rise of 10° C. in the temperature of the organs exposed to sunlight doubles or even trebles the rapidity of the reactions observed—for example, the intensity of respiration is greatly enhanced, more carbon dioxide being liberated.

" 'In fruits exposed to sunlight, the plant acids contained are reduced, and the ripening is correspondingly hastened.' "

# The Food Value of the Banana

Viewed from a chemical standpoint, the banana has nearly the same food value as he Irish potato. Carefully conducted exeriments in animal feeding, however, have hown that the banana is in certain respects much inferior to the potato. The potato, s is well known, possesses very proounced anti-scorbutic properties. An unce of potato soup is practically equal to he same quantity of orange juice in the revention of scurvy in young infants. But the banana is much inferior to the potato in the amount of its vitamin content.

Recent experiments conducted by Lewis showed that guinea pigs fed on an exclusive diet of bananas die in twenty to thirty days. Nearly an ounce of bananas a day, in connection with a diet of rolled oats, is found sufficient to prevent scurvy, but does not support normal growth in young animals.

## High Protein Diet in Nephritis

Dr. L. H. Newburgh, of Ann Arbor, Michigan, has recently shown by animal experiments that a high protein diet produces nephritis.

*The Journal of the American Medical Association,* in criticizing the experiments, expressed the view that the diet was of such a character as to produce an acid urine which would damage the kidneys, but this objection was refuted by the fact that careful tests made of the urine showed that it was not acid but alkaline. The journal also suggested that there was a lack of vitamins, but this also was disproven, as pointed out by Dr. Newburgh by the fact that the animals that died received the same diet as the animals which lived and did not suffer from nephritis, except that they received twice the amount of protein.

It is plain from these interesting experiments by Newburgh that thousands of people in the United States are daily consuming protein in such excessive and unutilizable quantities that they are enormously overworking their kidneys and paving the way for an early death from Bright's disease. The fact that Bright's disease is increasing in this country at a prodigious rate is evidence that something is wrong with the habits of the American people. No doubt tobacco smoking has something to do with the increase of the death-rate in men, which is considerably in excess of the increase in women; but there is also an increased mortality rate in women, which suggests the probability that the current high protein diet, and possibly also the use of tea and coffee, are factors in the great increase of this malady.

## Serum Treatment of Meningitis

It seems to have been definitely proven that meningitis, when due to infection of the meningococcus, may be successfully treated by the injection of a special serum into the lumbar portion of the spinal canal. About an ounce of serum is given twice a day for three or four days.

## The Germs in Milk

Germs of various sorts grow readily in milk. This is especially true if the temperature is high. The higher the temperature, not exceeding natural temperatures, the more rapidly the germs develop. Laboratory experiments confirm the practical fact, long known, that low temperatures greatly restrict the growth of germs, but Conn and Esten have recently "observed that when milk was kept at 1° C. there was no increase of germ life for six to eight days; after that time there was decided growth, but no lactic acid bacteria seemed to multiply. The authors think, therefore, that when milk is kept at low temperature for some time it becomes unfit for food, especially for infant feeding. Though the organisms multiplying at this temperature do not change the milk in such a manner as to render the altered condition easily detectable, the milk may become a menace. However, it has not been conclusively shown that the products of these bacteria are really injurious."

## Raw Beef Not Needed in Scurvy

A recent number of the *Scientific American* calls attention to the fact that the advantage of raw lean beef in preventing scurvy has been overestimated. There is no doubt of the accuracy of the observations of the *Scientific American,* but a more accurate statement would have been that raw, lean beef is absolutely unnecessary and often harmful in the feeding of young children. It is, indeed, positively damaging for young children.

## The Possible Explanation of the Acidosis of Diabetes

Some seventeen years ago, in 1901, Loew discovered in the blood a substance which serves to cause oxygen to combine with the various wastes and other oxidizable substances found in the blood and other tissue fluids. To this remarkable ferment, or enzyme, which is found in plant juices as well as animal fluids, he gave the name of “cat- lase.”

Recently, Kennedy and Burge have shown hat the removal of the pancreas prevents he formation of catalase. It is well known hat in diabetes the body has for some reason lost, to a certain degree, at least, its ower to burn or oxidize sugar, which constitutes the chief fuel of the body.

It is also known that in this condition cidosis, due to the imperfect burning up of ats, is a constantly threatening danger.

The further fact that in practically all ases of diabetes the pancreas is found to e in a more or less advanced stage of dis- ase; agrees entirely with the observation f Kennedy and Burge, and naturally leads o the conclusion that the laws of diminu- ion of the catalase of the blood through the ailure of the pancreas to produce this es- ential hormone is the immediate cause of iabetes.

## The Value of Bread Protein

Observations made by Rubner and some thers have seemed to furnish ground for uspicion that the protein of wheat, hence f bread and of other cereals, is so in- erior in character as to greatly depreciate s value as a nutrient.

Professor Sherman, of Columbia Univer- ty, publishes in the *Journal of Biologic hemistry* for January, 1920, a report of n interesting research conducted by him- elf and two of his assistants which shows at bread protein really possesses a high utritive value and is capable of supplying l the needs of the body when taken in the orm of bread in such quantity as to sup- y one calorie per kilogram of body eight. An ounce of bread contains about n calories of protein, so that twelve ounces three-quarters of a pound of bread would pply all of the protein required by the ody for one day. Professor Sherman otes, however, that a small amount of ilk protein is required to enable the body utilize the protein of cereals to the best lvantage. The amount of milk neces- ry to furnish this essential is small, however, four ounces being found quite sufficient for the purpose. Professor Sherman’s experiments also showed that the proteins of corn and of oats have practically the same value as that of wheat.

## The Girls’ Health League

The Young Women’s Christian Association of New York has organized a Girls’ Health League, “for the purpose of helping girls and women to find out where they stand in regard to health; whether they are living in such a way as to promote health; whether there are any things they can do to make their health more secure.”

This is a capital idea. The announcement made by the promoters of the League tells the girls that the preservation and improvement of health is a girl’s “biggest job,” and one of the most important things about which she can concern herself.

## Antiscorbutic Foods

The large number of deaths which result annually among the children of the poor as the result of infantile scurvy has led in recent years to a wide-spread investigation of the antiscorbutic properties of different foods, in the hope of increasing the number of foodstuffs rich in the vitamins needed to prevent scurvy. Heretofore, fresh fruits and vegetables, fresh milk, and especially orange juice, lemon juice, and potato soup, have been chiefly depended upon as preventives of scurvy. More recently, this valuable property has been found to be possessed by the fresh juice of tomatoes and of turnips.

It has now been shown that the dried tamarind and the mango, two fruits found in great abundance in tropical countries, are capable of preventing scurvy. They are largely used and highly esteemed for this purpose in India. They are, perhaps, not quite equal to orange juice, the swede turnip, cabbage and sprouted beans, but they are fully equal to carrots, cooked potatoes, the beet root, and meat juice.

# PUBLISHER'S LETTER BOX

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"Mrs. Mente was a patient at the Battle Creek Sanitarium about eight years ago and was almost miraculously restored to me, after my physicians had given up all hope.

"After returning home we subscribed for your valuable magazine and have watched it grow from a small pamphlet-like publication to a large and indeed very interesting and instructive magazine, which is a most welcome guest at our home.

"We are following closely its biologic instructions and are thus saved from Nature's ills and physician's bills.

"The magazine is unique in its makeup, and indeed a boon to humanity."

GOOD HEALTH

VOL. LV MAY, 1920 No 5

# Clean Blood Needed

Lord Bacon recommended copious bleeding every spring to change the blood.

His idea was that the blood becomes thick and impure by high living, and should be changed once a year by letting out the impure blood and giving Nature a chance to make a new supply.

Bleeding as a means of getting rid of bad blood was a method quite generally practiced in Bacon's time. This sanguinary method, however, was long ago abandoned and its place taken by dosing with various bitter tonics in the spring. All sorts of roots and herbs have thus been recommended for purification of the blood. But experience has shown that the blood is purified not by putting something into it, but by getting something out of it. Lord Bacon was right on this point.

The best method of cleansing the blood is to wash it with clean water and clean air. The need of clean blood is felt particularly in the spring when, with the onset of warm weather, we lose the tonic influence of the keen, cold air of the winter months.

Here are some of the symptoms of unclean blood:

Are you weary when you haven't wrought—tired when you haven't toiled? If so, your blood isn't clean.

Do you feel dull, stupid, confused, irresolute, uncertain? Your blood is tainted.

Are you sleepless, nervous, irritable? Your blood is full of irritating poisons.

Do you have headaches, pimples, a leathery skin, brown circles around the eyes, stiff joints, a coated tongue, a bad breath? Unclean blood is the explanation.

Are you getting old before your time? The blood is wrong. Unclean blood makes hard arteries.

Every drop of blood has a hundred million living organisms in it, every one working for the maintenance of life.

Every body cell needs air—oxygen—just as does a bird or a mouse. It must breathe. Each red blood corpuscle carries a tiny bit of oxygen to some distant cell in the brain or the liver or other part, which will die of asphyxia if not rescued.

Every cell in the body, like every plant and every animal in the world, needs water. As an eminent French physiologist once remarked, "All life is under water." The cells of the body are bathed in the blood. If the blood is impure, every cell, every fiber of the body is bathed by an impure fluid, and must be more or less injured thereby.

Picture in your mind a glass globe filled with water and fishes and other small creatures swimming about in it.

Now imagine that indigo, ink, or other coloring matter is dropped into the water. The water will immediately become tinged, and if the coloring matter is of a poisonous character, the fishes will soon show uneasiness, and unless relieved by a replacement of the impure water by a fresh supply, will soon die.

This is just the condition of the living cells of the body when bathed in impure blood. The stomach cells which secrete the gastric juice, the muscle cells which contract, the liver cells which make bile, the brain cells which think—every one is definitely and seriously injured by the impurities brought in contact with it.

The body cells are constantly assailed without and within by myriads of death-dealing germs. One blood cell in every seven thousand is a germ fighter. When germs appear, the fighting cells go straight for them, and annihilate them. We have each of us some thirty billions of these fighting cells to defend us. Each blood cell seems to have a will of its own, and to be possessed of a peculiar intelligence whereby it is unerringly led to the point where it is needed.

Endurance, stamina, ability to live long and well, to think clearly, to decide quickly, to work, to achieve, to enter into life in its fulness—all depend on clean blood.

The blood cannot be made clean by drugs. The idea that blood may be purified by medicine of any kind is a very great error, and one which has been productive of a vast deal of mischief. There are no herbs or drugs that will purify the blood.

The blood must be enriched by an ample supply of wholesome food elements, as well as purified by the removal of waste materials and the exclusion of unwholesome material.

The only way to have clean blood is to live biologically—physiologically. Clean, natural food, clean water, clean air, clean living, make clean blood; and the blood does the rest.

"The blood is the life."

# Changing the Flora of the Intestinal Tract

The *Journal of the A. M. A.*, quoted in *Current Comment*, calls attention to the fact that Distaso (formerly an assistant of Metchnikoff of the Pasteur Institute) and Sudgen have demonstrated "that it was impossible in the lower animals to displace the existing intestinal flora by feeding antagonistic bacteria. On the contrary, they showed that all that was necessary to produce this desirable effect was a change in the diet of the animal. It cannot, of course, be definitely concluded from these experiments that a similar course of events takes place in human beings; but the work strongly emphasizes that the best means to reduce one variety and to increase another variety of bacteria in the intestinal tract is to change the character of the diet. In lower animals, when the appropriate diet is introduced, the bacterial substitution takes place automatically."

A very important point to which the journal neglects to call attention is that the most essential thing to be done in attempts to change the flora is to discard flesh meats of all sorts. In many cases even eggs must be tabooed for a time at least. A meat diet not only encourages the growth of objectionable flora in the intestine, the wild bacteria of Herter, but actually introduces these bacteria in enormous quantities, for they are always found growing in meat, which affords a favorable nutrient media for these pernicious organisms. It is an error, however, to assert that it is impossible to displace the objectionable germs by replanting the normal protective bacteria which Nature places in the intestine of the young infant, as shown by Tissier, and which have been driven out by meat-eating and other errors in diet and by neglect of prompt evacuation of the food residues. Rettger of Yale, Torrey, and others, have shown most conclusively that the flora of rats can be easily changed by a few days' feeding, either with milk sugar or dextrine, or by adding to their ordinary diet half a teaspoonful of a pure culture of the *Bacillus acidophilus,* the protective organism above referred to. Half a dram of milk sugar, an equal quantity of dextrine, or a half dram of the *acidophilus* culture, or a combination consisting of one gram (one-fourth dram) of culture and an equal quantity of dextrine or milk sugar, was found sufficient to drive out the objectionable flora and to produce an almost pure culture of the *Bacillus acidophilus* in the feces of the rat.

The writer has obtained similar results in hundreds of human beings, employing a special dietary in combination with the *Bacillus acidophilus* and other protective flora.

# A Biologic Error

An English writer, Dr. Clement Dukes, to emphasize the importance of eating "an excess of protein" cites the fact that the constituents of the egg comprise roughly two-thirds of the albumen, represented by the white, and one-third of the fat, or hydrocarbons, which form the yolk of the egg.

It is surprising that a scientific man, least of all a physician, should make a statement so widely at variance with known scientific facts. The facts are that the white of egg is seven-eighths water; the yolk of egg instead of being all fat, as stated by Dr. Dukes, is one-half water, one-third fat and one-sixth protein. The fact is the white of the egg is not intended by Nature to be eaten as food at all, and is not eaten by the chicken, but is that portion of the egg which constitutes the embryo of the chicken and is by a wonderful process of evolution developed into the blood, bones, muscles, nerves, feathers, and other structures which constitute the young chicken as it emerges from the shell. The yolk of the egg, which is the only part of the egg intended for food, is stored up for the use of the young chicken while it is developing within the shell. The nutritive value of the yolk as compared with that of the white contains more than three and one-half times as much nutrient material, the white of the egg having a value of 17 calories, while the yolk represents 60 calories.

# The Tobacco Waste

A writer in *Harper's Magazine* bewails the enormous waste of tobacco in this country. He says: "It is well known that smokers waste one-eighth of every cigarette and one-tenth of every cigar when they throw away the stubs or butts. Consider what this waste amounts to annually in the United States.

"The Bureau of Brute Facts in Washington has recently estimated that 50,000,000,000 cigarettes and 5,000,000,000 cigars are smoked annually in the country. By a simple computation we arrive at the amazing result that 7,000,000 pounds of tobacco are wasted every year. This would be sufficient to make a building five times the height of the Woolworth Tower. The stubs, if you could arrange to lay them end to end, would reach from Sandy Hook to the Bight of Benin. If this quantity of tobacco were rolled into one giant cigarette, it would take a hard smoker, smoking continuously, 143 years, 7 months, and 6 days to consume it.

"Now let us make a very simple proposal. Let us assume that the manufacturers of tobacco should make cigars three-tenths inch and cigarettes one-fifteenth inch shorter and see what an economy would be effected. The stubs, instead of being wasted, as now, would be smoked to the bitter end. Thus 220,000 men who are now employed in the manufacture of tobacco would be set free to more useful work, provided they could find it; 25,000 acres of land now under tobacco would be available for the culture of string-beans. Even more striking would be the bearing of this proposal upon the match industry. Assuming that the average smoker consumes five average matches in trying to light one average match, and hence ten in lighting a cigarette and twenty in lighting a cigar, one can see at once that the number of matches saved if laid end to end. . . ."

We agree with the writer that the use of tobacco is accompanied by an enormous waste. But the waste is not due to the failure to consume one-tenth of each cigar and one-eighth of each cigarette and throwing away the butts. The real waste is the result of the inhalation of the poisonous fumes of the part that is smoked rather than the part which is thrown away. If all of the 50,000,000,000 cigarettes and 5,000,000,000 cigars that are smoked in this country annually were thrown away, the gain to the country would be immense. Let us see some of the things we would gain. First of all we are told by the medical expert of one of the greatest life insurance companies that ten per cent of all smokers are killed by tobacco smoke, that is, that the mortality of smokers is ten per cent greater than that of non-smokers living under like conditions.

The smoker loses more than ten per cent in efficiency. Tobacco is a narcotic. Its "soothing influence" causes depression of every vital function.

Tobacco contains some of the most virulent poisons known. Tobacco smoke contains some additional and equally active poisons produced by combustion.

These tobacco poisons destroy the blood, damage the nerve cells, injure the kidneys, harden the walls of the arteries, cause degeneration of the liver, impair digestion, impair the mental faculties, lessen muscular energy and work havoc throughout the entire vital domain. If all the tobacco produced each year on the 250,000 acres devoted to its culture were gathered in one place and consumed in one great bonfire, great would be the good thereby. The people of the United States would be saved from the destructive influence of the 10,000 or more tons of nicotine contained in the annual tobacco crop.

Here is another point which the writer in *Harper's* seems to have overlooked. The smoker has a good reason for throwing away the stub of his cigar. As he smokes, the nicotine and other poisons are concentrated in the suction end of the cigar by condensation, so that the amount of poisons contained in the smoke increases as the cigar is gradually shortened by its combustion, and by the time it is three-quarters smoked, the concentration of poisons in the stub end has become so great that the poison dose in the smoke is three or four times that present at the beginning, and not infrequently the smoker experiences unpleasant toxic effects from the inhalation of the surcharged smoke.

# Cigarettes in the High School

Mr. E. F. Warner, Ohio State High School inspector, has recently been making an inquiry among the senior students of the high schools of the State as to the cause of the deterioration of scholarships in high schools, which has been very noticeable not only in Ohio but in other States as well. Here are some of the many answers which Mr. Warner received from students in different parts of the State:

"Cigarettes I would say is one of the big hindrances. In particular cases I know of girls using them to almost the same extent as boys."

"Late hours, pool rooms and cigarettes."

"Smoking and hanging around pool rooms are making bums of the younger set."

"Too much Brunswick."

"Pool room hangouts and cigarettes."

# Surgeon General Cummings Denounces Smoking

We copy the following from the current newspaper press:

## MUST SWEAR OFF

### Surgeon-General Cummings Appeals to Women to Quit Smoking

*Entire Nation Will Suffer, Says Cummings, if American Women Get Habit*

Washington, April 3.—Surgeon General Hugh S. Cummings, chief medical officer of the United States government, today made an appeal to American women to swear off the cigarette habit.

Dr. Cummings' appeal was based upon government figures, which indicate that cigarette consumption has increased 47 per cent in the United States in the last year.

"The cigarette habit indulged in by women tends to cause nervousness and insomnia, ruining the complexion," said Dr. Cummings. "If American women generally contract the cigarette habit, as reports now indicate they are doing, the entire American nation will suffer. The physical tone of the whole people will be lowered.

"This is one of the most evil influences in American life today. The number of American women who have become smokers is amazing.

"The habit harms a woman more than a man. The woman's nervous system is more highly organized than the man's and the reaction on a woman is more intense."

Surgeon Cummings is absolutely right in his attitude toward the use of tobacco by women, and he ought to have the support of all right-minded men and women everywhere, in his attempt to stay the advancing tide of the drug addiction which is rising higher and higher every year and threatens to work the ruin of American womanhood, and finish the destruction of the human race. So long as tobacco-using was confined to men, the terribly evil effects of the drug, though evident to unbiased experts, were to a large degree concealed, because of the untainted heritage which every child born received from its mother. But if women become as much addicted to the use of tobacco as men now are, the most appalling physical degeneracy will speedily make its appearance.

Experiments upon animals as well as the observations of physicians, have clearly demonstrated the special injurious effects of tobacco upon the female constitution. Gy and other French investigators have shown the deadly effects of tobacco upon the embryonic life. The infants of tobacco-using mothers are very likely to be born dead or to die shortly after birth.

They are poor wizened creatures, whose constitutions have been wrecked before they were born, by the pernicious habits of their parents.

Recent statistics show that the use of tobacco among men has increased 47 per cent within the last year, and the conscienceless promoters of the tobacco business are doing their utmost to promote the use of tobacco by women at an equally rapid rate. It is high time that the world should be aroused to the necessity for resisting and vigorously combating the onslaught of the tobacco mongers upon the manhood and womanhood of all civilized lands.

# The Increase of Rigg's Disease or Pyorrhea

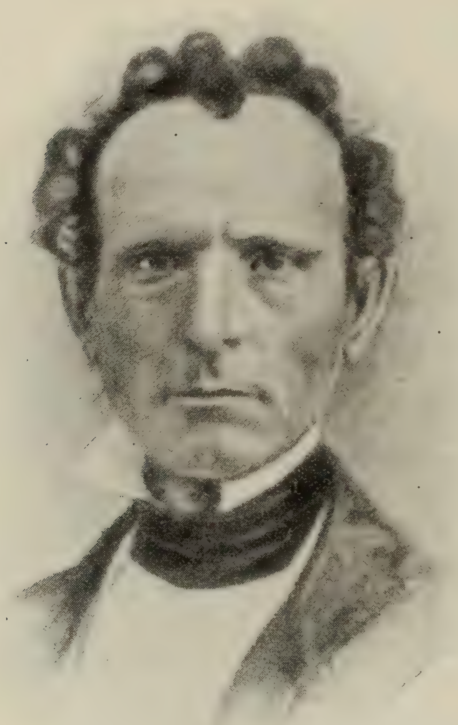
That pyorrhea is increasing in this country as well as in other civilized lands is now becoming well recognized. Some medical men, indeed, assert that 50 per cent of the entire population are suffering from mouth infection in the form of Rigg's disease. This estimate may be somewhat exaggerated, but it cannot be doubted that this common malady is daily becoming still more common, this, notwithstanding the fact that the toothbrush is being used more industriously than ever before in the history of the world. In some cities every child is supplied with a toothbrush and taught how to make use of it. Dental clinics are held in many places for the purpose of examining and treating the diseased teeth of school children, and yet pyorrhea increases.

There seem to be grounds for suspecting that the old-fashioned toothbrush may be the cause of spreading the infection, and possibly in several ways. If the skin were vigorously rubbed with a toothbrush for a few moments, the result would be an abraded surface which would soon become the seat of infection and a sore would develop. It cannot be doubted that similar effects may be produced upon the tender gums by laceration produced by brushing with a new or stiff bristle brush. In the presence of the germ-laden saliva any injury to the gums is likely to result in infection. Again, it cannot be doubted that in many families, especially poor families, more than one person may use the same brush. If one happens to have pyorrhea the disease will be easily spread from mouth to mouth, for no better medium of infection could be imagined than a bristle brush. If a small focus of infection is developed in the mouth, the invading bacteria are quickly spread around by the use of the brush, and by the injuries done to the gum by the sharp bristles all the conditions necessary for spreading of the disease are established.

The brush should be discarded. The teeth should be kept clean by the use of wholesome food, especially the chewing at each meal of some hard and dry food and by daily polishing with wood pulp paper. A strip of ordinary paper toweling may be rolled into a cylinder the size of the finger, and with this the teeth may be quickly polished by the aid of vigorous rubbing. A better plan is to fold a piece of paper toweling, or some other sort of wood pulp paper, into a little pad. Place this in a proper holder and rub the teeth in much the same way in which they may be rubbed with the brush. By this means the teeth may be quickly polished so they will feel like ivories. The polishing may be done with the paper alone if the rubbing is continued long enough. A fine polish is produced more quickly, however, if a suitable powder is used with the moistened paper. This new method of grooming the teeth has been received with much favor wherever it has been introduced, and in the opinion of the writer is destined to take the place of the discredited toothbrush.

# Sylvester Graham, the Pioneer Food Reformer

Readers of Good Health will be interested in the accompanying portrait of that pioneer of food reformers, in this country, the Rev. Sylvester Graham. The portrait was enlarged from a miniature the writer has had in his possession for perhaps forty years. If some reader happens to have a better photograph of this remarkable man, the editor of Good Health will be very glad to obtain the loan of it or to purchase it, if it is for sale.



In his remarkable little work, "Food in War Time," Dr. Graham Lusk, of New York City, one of our foremost authorities on nutrition, says of Sylvester Graham:

"It so happens that he was a brother of my great grandmother, and of him my father wrote in 1861, 'long, lanky Sylvester Vegetable Graham, leanest of men.' Graham in 1829 began the advocacy of moderation in the use of a diet consisting of vegetables, Graham bread, fruits, nuts, salts, and pure water, and excluding meat, sauces, salads, tea, coffee, alcohol, pepper, and mustard. The first effect of this diet, which largely eliminated the flavors, was to reduce his weight through lowering the intake of food, but the health of many followers of the diet appears to have been benefited. The 'Graham System' of dieting suffered from withering criticism at the time. He published in 1837 a little book entitled 'Bread and Bread Making,' bearing on its cover the scriptural quotation, 'Bread strengtheneth man's heart.' He says in this volume:

"'But while the people of our country are entirely given up as they are at present to gross and promiscuous feeding on the dead carcasses of animals and to the untiring pursuit of wealth, it is perhaps wholly vain for a single individual to raise his voice on a subject of this kind.'"

# Interesting to Meat Eaters

According to the report of the Bureau of Animal Industry, we (that is, the people of the United States) killed during 1918 a hundred million beeves, sheep, pigs and goats, one whole beast for every man, woman and child in the United States.

Of this vast multitude of animals, the Federal inspectors examined nearly two-thirds (60,000,000) and found one and a half per cent so badly diseased that the whole or a part of the carcass was condemned. In other words, nearly a million (900,000) carcasses were found seriously diseased.

But there were 40,000,000 other beasts killed and eaten which were not inspected, and they were without doubt much more badly diseased, a fact which was in many cases, most likely, the reason why no inspection was made. Allowing that three per cent of these were diseased, a low estimate, the total number of diseased animals found in the 100,000,000 slaughtered was not less than 2,000,000, or one in fifty of the total number. And most of these diseased animals were eaten by human beings either in whole or in part.

Pleasant thought, isn't it, that your stomach, your body, has been made a sepulcher, a sort of potter's field, for a sick cow or sheep or pig?

If we should abandon meat eating we would not have to worry about what disease our victuals died of.

# How We Poison Ourselves

Man is the only animal that deliberately commits suicide by self-poisoning. He is the only creature that spoils food before he eats it. The average man suffers from chronic poisoning all day long. He doses himself with poisons of various sorts which in the aggregate make a per capita dose of more than fifty grains of poison every twenty-four hours for every man, woman and child in the United States. He begins the day with a poison dose in the form of coffee to wake him up. After breakfast he smokes a cigar to settle his stomach and quiet his nerves. Before dinner he swallows half an ounce of whiskey or "bitters" to get an appetite. He finds an afternoon cup of tea necessary to cure after-dinner stupor; at night he needs an opiate to get to sleep, and in the morning a cathartic to move his bowels.

J. H. Kellogg

# Food and Diet

A series of interesting articles on "Diet in Health" has recently appeared in *The Practitioner,* an English medical journal, some paragraphs of which we feel sure will be of interest to our readers:

"That man lives by what he digests and not by what he eats is an oft-repeated truism, which is daily neglected both in the practice of the people and the advice of the physician. The reason is probably to be found in the fact that the picture which it conjures up is not sufficiently detailed to strike the imagination and hold the attention. The body contains, or is capable of producing, a certain amount of energy only, and if a large measure is dissipated in the wholly useless purpose of dealing with food which is not required, then it follows that some of the other and more important functions must be inadequately performed.

"The question, then, which naturally presents itself is: Why should mankind evince such a universal tendency towards over-eating? In no other direction does Nature herself seem to impel to excess; economy, even parsimony, is what she seems to dictate. The answer seems to be that the impulsion is more apparent than real; that the call to surfeit is a provocation rather than an impulsion; that the unnatural appetite is due to unnatural conditions into which man long ago ignorantly drifted, and out of which science has so far failed to lift him.

"If we allow imagination to range back to the dietetic habits of primeval man, we shall not be slow to realize that there must have been a time when cooking was unknown to him; a time, therefore, in which he subsisted entirely on herbs, fruits, and the raw flesh of small animals. When he discovered cookery, its gustatory allurements overbore him, and he ceased by degrees to regard any food as fit for human consumption which had not been subjected to some sort of culinary process. It is, therefore, in the increased and thus unnaturally palatability of cooked food that we must seek for part, at any rate, of the explanation of habitual over-eating.

"But that does not comprise the whole solution. Cooking admittedly alters the composition of all foods, but it is not a legitimate assumption which supposes that the alteration is necessarily advantageous to the feeder. Roasting is known to drive off gases, and boiling to extract salts. It may, therefore, be that all cookery deprives the natural foods of some material which is essential to the human economy. If this could be shown to be the case, the practice of over-eating would be further, if not altogether, explained. In her desire to obtain a sufficiency of these elusive essentials which have been seriously reduced by cookery, Nature impels the feeder to go on eating the cooked and impoverished foods until she is able to extract from the mass the measure of essentials necessary to her purposes.

"This proposition is not difficult of acceptance. If, for example, you eat a raw apple, you consume something which is alive and capable, potentially, at any rate, of reproducing its kind. To cook that apple is to kill it. You deprive it of all its vitality; and it is easy to suppose that, contained in the vitality thus destroyed, there are some elements which when passed into the human stomach are in some degree valuable to the economy. Raw foods, natural foods, that is, do not provoke to surfeit, they stop at satiety. They provoke, nay, they compel mastication, the relative absence of which in our present table practices is rightly held responsible for much ill-health, especially in the case of children.

"The advocates of natural foods have always hitherto been regarded with smiling indulgence by the scientists. The clinical facts to which they were able to direct attention were brushed aside with ill-concealed impatience. Quite recently, however, science has come to their rescue and has shown them, if not to be wholly right, then certainly to be on the right track. The discovery of vitamins, the so-called 'accessory substances,' has provided the key to much which, in our ignorance of them, was very difficult of explanation. In their admirably lucid articles, Sir Kenneth Goadby and Professor Bayliss tell us all that is at present positively known about these subtle and delusive substances; but it is evident that we are only on the threshold of a vast and rich field which is shortly destined to be thoroughly tilled. It is now impossible to discuss any question of dietetics without very special and intimate reference to the bearing of vitamins upon our hitherto accepted views.

"It would, at this stage, be both imprudent and presumptous to hazard an opinion upon the nature and degree of the modifications which the discovery of these substances will ultimately affect, but it is evident that cookery must already be considered to be on its defence to the charge of seriously depleting the natural foods of elements which are, to say the least, very desirable to the growth of children and the maintenance of the adult in his fullest efficiency. There can be no doubt that the scale of calories required for the individual is, other things being equal, very much lower in the case of one who relies mainly on uncooked foods than it is in the case of him who feeds according to the now generally accepted standards of cooked foods."

The apostles of the raw food system ot diet will be greatly edified by the preceding paragraphs. In the opinion of GOOD HEALTH, however, the English editor has gone a step too far in the endorsement of the raw food idea. Some raw food should be eaten at each meal, but it is certainly not necessary that the whole bill of fare should be made of uncooked foods. Cooking does not destroy vitality any more than does digestion. Whatever vital principle it may be, it cannot endure the ordeal through which the food passes in undergoing the processes of digestion and assimilation. The damage which food undergoes in the process of cooking is not the destruction of its vitality but the destruction of vitamins which are essential to health.

# Diet in the Balkans

ALEXANDER ANGELOU

Among the Greeks, Slavs, Rumanians and the rest of the Balkan peoples, the diet is a part of their religion—the Greek Orthodox Christianity. There is a tradition among these people that the early church fathers who fixed the fasting periods were doctors of the body as well as of the spirit, and their medical knowledge was handed down to them from the ancient Greek physicians. It seems that these doctors of old paid much attention to dietetics, and today we see a survival of their teaching in the form of religious traditions among the Greek Catholics.

Over two hundred days in the year the Greek Catholics fast, and their fasting differs greatly from the Roman Catholics in that they abstain not only from meat but also from any food that is of animal origin, milk, cheese, eggs, fish, etc. These fasting days are divided into four periods, each period ending in one of the four most important holy days of the Church. And when the fasting periods are over, again meat is eaten very sparingly, Sunday being the only meat-eating day.

Now as to what they eat during the fasting periods. During the spring fast, which lasts almost two months, March and April, they eat abundantly of green herbs and vegetables, cooked or raw but always mixed with much pure olive oil. Green mountain nettles, sorrel (zourers), spinach, young onions, young leeks, young garlics, and innumerable other species of wild or garden greens are the staple dishes of this period. This fasting is also called the "springtime tonic," and at the end of it—which is Easter day—one may see healthy men and women with beautiful complexions and red cheeks, their stomach and bowels being entirely cleansed and their blood purified and enriched. The summer and fall fast consists of fresh fruits, vegetables and olive oil, and the winter fast is of dried fruits and dried greens and vegetables. The dark wheat bread and the crushed boiled wheat always go with every fast.

During the non-fasting days, one of the most constant food articles is the yogurt which is native to the Balkan countries. Of the meat, which is so seldom eaten, the light meat of lamb is used during spring and summer, mutton in the fall, and beef or pork only on a few Sundays of winter.

The Balkan peoples are mostly vegetarian and frugivorous. In civilization these peoples are more primitive compared with Western Europe and America, but in their diet they are far more scientific than the Westerners. Hence they live longer and healthier lives.

# The American Nut-Producing Industry and What It Needs from Congress

HON. JOHN E. RAKER

[The following statement concerning the nut industry of the United States by Hon. John E. Raker, Representative in Congress from the State of California, is quoted from the hearings of the Agriculture Appropriation Bill, 1921.]

"The United States last year produced approximately twenty-seven million dollars' worth of Persian (English) walnuts, pecans, and almonds, its three most important nut species. There were also produced probably some two or three million dollars' worth of minor nuts, such as black walnuts, hickories of the various kinds, butternuts, filberts, and chestnuts, making a total of close to thirty million dollars' worth of nuts. It annually imports twelve or thirteen million dollars' worth of foreign nuts. Therefore the total consumption in this country is probably between forty and forty-five million dollars' worth.

"Production and consumption of nuts are being greatly stimulated in this country by virtue of the decreased grazing area on which to produce beef, and the necessity on the part of the greatly increased population to find other sources of protein, fat, and carbohydrates. Farmers are finding the production of nuts one of the most profitable uses to which suitable soils can be put. Many are becoming wealthy out of this industry, while others are losing money for lack of intelligent information as to the proper sections in which to plant, proper kinds, reliable sources from which to obtain planting stock, knowledge as to cultural needs, or, finally a ready market.

"The Federal Department of Agriculture has done much toward obtaining and disseminating the needed information of this character. Several of the States have likewise made important contributions along the same line, particularly California, in aiding both the walnut and almond industries. There is still much to be done. In fact, the greater and more important these various industries become, the more they need the assistance of the best possible expert investigation that can be had. There are successive stages of development through which these industries, in common with all horticultural industries, must pass to become substantially successful on a large scale. At present the Persian walnut industry is ahead of all others in development and organization. The almond industry ranks second, and that of the pecan third. Production of black walnuts, hickories, and others of the northeastern quarter of the United States is strictly in the experimental stage as an industry.

"Beginning with the new industries and continuing through to those most highly developed, some of these successive stages are as follows:

"1. The merits of the species must first be determined. It must prove to have a product worthy of time and money by intelligent farmers.

"2. The most perfect type or varieties must be selected and made available. Many thousands of farmers are today producing varieties of nuts of second- or third-class merit. Such varieties are equally as expensive or difficult to grow as are others producing a product worth several dollars more per tree. Every dollar's worth of a food product that a tree produces less than it might produce is a dollar added to the cost of production and therefore to the high cost of living.

"3. The question as to where the species will succeed must be determined. Next it must be shown which varieties will succeed best in the various parts of a general geographical territory. For example, the Persian walnut has been found at the expense of the growers themselves to be quite unsuited to growth in the Southern States and hardly capable of adaptation in any State east of the Rocky Mountains. It is not profitable on the Pacific Coast except in certain localities. Within these localities there are such differences of local conditions that varieties which are highly successful in one place will not necessarily succeed in another. Southern California, where approximately 97 per cent of the total American crop is produced, confines itself to a South American type, whereas in the Northwest types from western Europe succeed best. With the almond, the situation is much the same, except that it is even more exacting in its requirements. It does not succeed east of the Rocky Mountains and is highly exacting as to conditions on the coast. It blooms with the first approach of spring, over a period extending from late January in some years till early March in others. It must be grown, so far as possible, in localities in which there is a minimum of danger from killing temperatures after the buds begin to swell. Very few of its varieties are capable of pollinating their own pistillate flowers. They must be intelligently interplanted to insure interpollination from the staminate flowers of other varieties blossoming at the same time. The pecan covers a tremendous area—practically the southern half of the country east of the Rocky Mountains. It is either indigenous or has been planted in every State between New Jersey and Texas and from Iowa to Florida. Yet Florida varieties will not succeed in New Jersey or Iowa, or vice versa.

Texas varieties do not succeed in Florida, but Florida varieties do succeed in Texas.

"4. How to cultivate and care for nut trees is the next problem. Very often, two farmers on adjoining land, having similar types of soil, the same varieties, trees from the same nursery, planted the same year and on the same day of the month, may have entirely different results. One may succeed and the other fail. One may have planted his trees too close together or he may have plowed too close and so broken the roots. He may have used a wrong fertilizer or he may not have known how to combat natural enemies, such as insects, diseases, rodents, or predatory birds. He may have undertaken to grow too many other crops on the same land or he may not have understood the importance of drainage. He may even have produced as good or better crops than his neighbor, but have failed to sell to good advantage. He may have lost his crop by improper care after it was harvested.

"5. Beyond the ordinary details of culture, as these nut industries have progressed, there come special problems of too great depth for the farmer to solve or for even the facilities of ordinary research. Already the nut farmer has been compelled to desist from the adequate use of commercial fertilizers, such as he employed before the war. He finds organic fertilizers too expensive, as the materials formerly used in their manufacture are now going into stock and chicken feeds. The mineral fertilizers are similarly high because potash is not yet coming from Germany in quantity and American potash is risky because of borax. The nut farmer is now endeavoring to work out his own salvation by the use of leguminous crops which can be turned under. There, again, particularly in the South, he finds trouble. Certain legumes are highly subject to nematodes, which feed upon their roots, multiply rapidly, destroy the crop, and then attack the roots of the nut trees. Another important problem is that of pruning. Investigations are lately demonstrating that unintelligent pruning often cuts off branches in which food material has been stored for the next season's crop and as a result there can be no crop. Or bad pruning may stimulate wood growth and effectively check the process of storing up crop material for the next year.

"6. Business management is a crying need with a high percentage of the nut farmers. The simple taking of individual tree records in orchards has often demonstrated that a great majority of the trees are not paying their way. In such cases, it is frequently quite possible to improve the cultural conditions affecting these trees so that their orchard performance can be converted into an asset instead of a liability. Without advice, it is easy for the farmer to overexpend in fertilizers, pruning, spraying, or even in labor. He must rely upon the scientist, who advises him in regard to special problems, to keep also in mind that he (the farmer) is dependent upon the net income of his orchard and that if greater profit could be derived from the land by some other use, or combination of uses, he wants to be so told.

"7. As the successful production of a crop calls for highly specialized knowledge, so at the present time the marketing of nuts is a highly specialized line. The time has come that without organization there can not be even an approximate standard of condition in which the product is put upon the market or of prices asked or received. The walnut and almond industries are now so organized that approximately 80 per cent of those crops are sold under a standard of grade, package, and price through non-profit co-operative organizations. The managers of these associations are highly paid efficient men of training and experience. The California Walnut Growers' Association, which is just now completing the marketing of nearly $15,000,000 worth of nuts, maintains its own staff of investigators, who, especially during the war, accomplished a great deal in the combating of natural enemies and in developing new uses for walnuts and walnut products. As a result of research work by this staff, that association is now organizing a subsidiary branch of itself for the manufacture and sale at cost to its members of a dust spray which it has perfected.

"The nut industry as a whole appears to be but in its infancy. The more highly developed of its American branches have made much progress, but it is safe to say that no horticultural industry of equal importance and so pregnant with possibilities has received so little attention at the hands of the State and Federal departments of agriculture. Over the entire country people are eating nuts as never before, not merely as condiments, but as staple articles of food. Farmers and landowners everywhere are planting nut trees and clamoring for information as to what to plant. Michigan has passed a State law providing for planting nut and other food-producing trees along its highways. Various organizations about the country are advocating the planting of nut trees as memorials to fallen soldiers in France. Thousands are being so planted, and it is important that wise selections should be made.

"Each nut industry has its special problems which if solved in time will mean the saving of many thousands of dollars to the farmers engaged in this important industry. The almond growers of California are confronted by special problems at this time. One of these is that of varieties. It has a superabundance of varieties. The Exchange reports that about 80 varieties are being grown in the State. The trade knows but five or six. Many of the 80 are so like the 5 or 6 that they can be mixed and sold under such names, although there are differences in their character and merit, especially in the orchard, which are apparent upon close examination. A great majority of the odd varieties are of mediocre value and bring a less price in the market than do the five or six, although they cost more to be sold. The Federal Department of Agriculture has taken up this problem of standardizing varieties of almonds and promises soon to point out their comparative merits in such a way that future planters will be discouraged in using any but the best sorts.

"Another problem confronting the almond industry is that of foreign competition. The American market ordinarily consumes admonds in the shell only during the fall and early winter, whereas it accepts almond kernels or "shelled" almonds as they are known, for practically the whole year. The cheapness of labor in foreign countries makes it possible for almonds to be cracked by hand before they are exported to the United States and placed here at a price far below that which can possibly be met by the American product, under present conditions. The almond growers have expended approximately $100,000 in developing machinery for cracking the home product, but thus far without satisfactory success. It needs the assistance of the best engineers in the Government to perfect such a machine. It is imperative that such a machine be developed for this purpose in the near future, as during the past five years almond planting in California has taken place at a rate that the home product must be enabled to enter the shelled, or the 12-month market, or production will inevitably soon exceed the supply."

# Ivy Poisoning

Poisoning by poison ivy or poison sumac is due to a highly poisonous oil known as toxicodendrol, which is produced by the various poisonous species of *rus.* This oil is found in the leaves, roots, flowers, and the green fruits of the plants but not in the pollen or ripe fruit. The very minutest quantities of this oil may give rise to all the symptoms of poisoning. The poison may be brought in contact with the skin by handling objects which have come in contact with the poisonous plants as well as by touching the plants themselves. It may be communicated by horses, dogs and other animals that have been in contact with the plants. Smoke from the burning of these plants may give rise to poisoning, but it has not been proven that the poison is otherwise transmitted to any distance through the air as once was supposed to be possible. The plants are most poisonous in the springtime and the summer season when the poison juices are most abundant, but the poisonous properties may be retained after they have been dried. Poisoning has occurred through contact with old herbarium specimens.

An attack of poisoning usually begins with a slight itching or burning sensation. This becomes more and more intense and in severe cases may become almost unendurable. Scratching greatly aggravates the irritation and the itching. Sometimes postules form and in healing great patches of dead skin are often thrown off. The irritation or inflammation of the skin produced by ivy poisoning does not differ essentially from that produced by bichloride of mercury, arsenic, formalin and various other chemicals.

The best method of preventing poisoning is the wearing of rubber gloves when exposed to possible contact with the poisonous plants. Smearing the hands with glycerin is also a means of protection. The poisonous effects may be in many cases prevented by washing the hands with soap and water after contact with the plants. The washing should be thorough and much soap should be used. Bathing the parts with alcohol is also a good means of removing the poison. After an attack has begun, the best means of relieving the itching is by bathing the parts with very hot water. The temperature of the water should be as high as can possibly be borne. In many cases the best means of applying hot water is to wet a smooth folded towel in water and apply as hot as can be borne. A good way to begin is by touching the towel to the skin and instantly withdrawing it, repeating the application and each time lengthening the time of contact until the towel can be brought firmly in contact with the whole surface. These applications may be repeated every hour or two or as often as necessary to relieve the itching. In the intervals the parts may be covered with cloths wet in water containing a teaspoonful of soda to the pint.

A two per cent solution of permanganate of potash may be usefully employed and is thought to have a direct influence in antidoting the poison. If the skin is broken, a half strength solution should be employed. Hyposulphite of soda in ten per cent solution is another useful remedy. Sulphate of magnesia or epsom salts is another remedy which has been much recommended. The fluid extract of grindelia, one part to ten of water, often gives great relief.

# The Avocado as a Source of Fat

The avocado is a unique fruit in that it contains a proportion of fat equal to that of rich cream. It is one of the most highly nourishing of all fruits. *The Journal of the American Medical Association* says:

"A few fruits may furnish a noticeable quota of real nutrients in the form of starch and particularly sugars; thus an ordinary sized banana is rated at a food value of 100 calories or more. But for the most part the fruits that enter into the ordinary regimen, however palatable, wholesome and dietetically valuable they may be, can scarcely be rated as significant sources of energy. The part that they play in nutrition must be estimated from other standpoints. Accordingly, an edible fruit in its make-up is worthy of special consideration. It may prove, for example, to become a valued adjuvant to the dietary of the diabetic, from which the carbohydrate content of many common fruits unfortunately excludes them. The possibilities of the avocado have been further promoted by recent investigations in California and Washington, both of which agree in assigning an excellent utilization to avocado fat, even when as much as 124 gm. (about 4½ ounces) a day were consumed. Heretofore the market price of this fruit has prohibited a very widespread use of what now appears to be a nutritious as well as palatable food. The avocado is indigenous to tropical and subtropical regions in the western hemisphere; but it is being cultivated to an increasing extent in Florida and California, and may ultimately become available at more reasonable prices in harmony with the history of other tropical fruits. Dietotherapy will testify that the enrichment of the dietary with a really palatable source of fat will not be unwelcomed in the management of certain nutritive disorders. Ordinary cream rarely exceeds the avocado in available fat content."

# A Certain Remedy for the High Price of Meat

The United States Department of Justice has organized a campaign to "save money on meat."

A big packer declares the cause of the high prices of meat to be that people are "eating too high up on the hog and too far back on the steer." Both packers and government officials recommend a more extensive use of the cheap cuts of meat. The public are told that the cheaper cuts of meat are really as good as the high-priced ones, and the information is correct. But the real truth is withheld from the people; although doubtless the officials know the truth they do not dare make known the scientific fact, supported by physiologists the world over, that meat may be wholly dispensed with as an article of food not only without injury but with great benefit.

The *Detroit Free Press* very correctly says that if the 58,000,000 pounds of fresh meat eaten daily were cut in half "it would be better for the nation both physically and financially. There would be less rheumatism less kidney trouble and less hardening of the arteries." And no intelligent physician will undertake to dispute this statement.

The half pound of meat eaten daily by the average citizen is for the most part worse than wasted. The other food eaten with the meat usually contains all the protein that the body requires, so that the meat protein eaten represents a surplus which appears in the form of urea excreted by the kidneys. This extra work which the kidneys are compelled to do wears them out prematurely and thus gives rise to Bright's disease, hardening of the arteries, disease of the heart and other maladies.

The cattle inhabitants of the United States outnumber the human inhabitants two to one. These four-footed citizens have big stomachs and consume four times as much food as would be required to support our 110,000,000 of United States citizens. All the food fed to these animals in fattening them for slaughter is thrown away. For every pound of corn fed in the fattening of steers only half an ounce of foodstuff in the form of beefsteak is returned, entailing a loss of more than 95 per cent of the food fed to animals intended for slaughter.

The best method of dealing with the high cost of meat is to eliminate meat from the bill of fare. Any one who desires to do so can discard meats of all kinds at once and without injury, if only the precaution is taken to eat a sufficient amount of butter fat and to take a glassful of milk at each meal. Milk contains all the nutritive elements found in meats and several important elements which meat does not supply.

# Neglect of Foods

The biologist tells us that they find evidence among the relics of the primitive inhabitants of our globe that in very ancient times an enormous number of plants were used as food and planted regularly which are now quite unknown to us, our garden and field plants being only the "choicest survivors." Among the peasantry of the Balkans, however, many of the very ancient plants are still in use, and are raised as garden vegetables. Among these are the dandelion, the sow-thistle, the nettle, colt's foot, earth-nut, dock, butter-cup, amaranth, and many others.

An English author has made an interesting collection of the various edible wild plants growing in England. Most of the same species or closely allied species are also to be found in this country. From more than a hundred such plants mentioned by Cameron, we select the following as most likely to prove acceptable additions to a biologic diet:

*The Red Poppy.*—The leaves of the common red poppy to be used as salad or cooked like spinach. The leaves should be cooked during harvest time.

*Shepherd's Purse.*—This very common weed should be cooked just before flowering. Prepare like spinach.

*Sea Kale.*—After blanching, the leaf stalk is cooked and served like ordinary garden sea kale. Plant flowers in June.

*Cuckoo Flower.*—Flowers in May. The young leaves and flowers are served and eaten like water cress.

*Winter Cress.*—Flowers in late spring and early summer. Found growing in clumps on grassy banks and damp places. Leaves may be eaten as salad or cooked as greens.

*Water Cress.*—Found growing in brooks. Is eaten raw.

*Marsh Mallow.*—The young leaves are cooked as greens.

*Wood Sorrel.*—May be eaten raw or parboiled and served as greens. Should not be eaten in large quantities on account of the oxalic acid which it contains.

*Hawthorn.*—Budding leaves may be served as salad.

*Gout Weed.*—A weed found growing in the garden and along the roadside. Used as greens.

*Alexanders (Smyrnium olusatrum).*—Cooked and served like asparagus. Flowers in early summer.

*Pig Nut (Conopodium denudatum).*—Flowers in early summer. The part eaten is the root, which is a small tuber. May be eaten raw or boiled or baked like potatoes.

*Caraway.*—Grows in waste places and pastures. Leaves may be boiled and served as greens, and the roots may also be cooked like carrots or parsnips. Said to be very palatable.

*Spignel.*—Grows in dry pasture lands. Roots cooked and eaten like carrots. In early spring the roots may be cooked and eaten like spinach.

*Samphire.*—Before the plant flowers the leaves may be gathered and cooked like green beans.

*Corn Salad or Lamb's Lettuce.*—Common in cornfields. Serve as salad.

*Yellow Goat's Beard.*—Common in meadows and woods in June and July. The young leaves are cooked like spinach. In autumn the roots are also edible cooked like carrots.

*Sow Thistle.*—The leaves may be served as greens.

*Nipplewort.*—Flowers in July and August. Serve the leaves like spinach.

*Wild Chiccory.*—Leaves somewhat resemble those of the dandelion. Mav be cooked like spinach.

*Borage.*—Bears dark blue flowers nearly the whole summer. Leaves and flowers served as salad.

*Nettle.*—Among the best of wild plants. Served as greens. English sportsmen feed nettle greens to their hounds in the springtime.

Scissors and gloves are necessary in gathering nettles to avoid stinging.

*Mint.*—Flowers in August and September. Leaves furnish refreshing aromatic oil.

*Thyme.*—Flowers during most of the summer. Leaves used for flavoring.

*Marjoram.*—Flowers in July and August. Is easily recognized by its downy leaves and purple flowers. The leaves may be used as seasoning or dried and used as a wholesome substitute for tea.

*Good King Henry.*—Dark green triangular leaves. Used as greens.

*Wild Beets.*—Found growing along seashore. Leaves used as greens.

*Wild Hop.*—Grows on alders, willows and hawthorns. Sometimes found on wild rose bushes. Young shoots cooked and served like asparagus.

*Sheep Sorrel.*—Found growing in meadows. Served as greens after parboiling.

*Great Reed Mace.*—Sometimes called bulrush. Cook and serve the young shoots like asparagus.

*Couch Grass.*—Cook the roots the same as asparagus.

*Lime Flowers.*—Flowers of the lime tree, after drying, may be used as a substitute for tea. Serve with a bit of lemon.

*Cowslip.*—Common in April and May. Serve as greens.

*Wild Strawberry.*—Grows abundantly in many places. Isaac Walton tells us that Dr. Butler said of the wild strawberry: "Doubtless God could have made a better berry, but doubtless God never did."

*Wild Raspberry.*—Superior in flavor to the cultivated raspberry though smaller in size.

*Wild Brambleberry or Wild Blackberry.*—Much sweeter and finer flavored than the garden variety.

*Bilberry, or "Black Whortleberry."*—One of the best of wild berries.

*Cranberry.*—Very abundant in certain marshes in some parts of the country. Its acid flavor is due to citric acid. Contains benzoic acid, on which account it should be avoided by gouty persons.

*Beechnut.*—One of the best of our wild nuts. Contains nearly 60 per cent of easily digestible fat.

*Hazelnut.*—A well-flavored and very wholesome wild nut which has come down to us from most remote times. Biologists tell us that this nut grew abundantly along the rivers of the ancient world peopled by our primitive forefathers.

*Braken, or Brake Fern.*—The young sprouts may be cooked and eaten like asparagus. The roots are also edible. May be ground and made into bread.

*Edible Seaweeds.*—There are several species, some of which may be boiled and eaten as vegetables and from others a delicate jelly may be made. The best varieties are the Lettuce Ulva, the Broad Ulva, the True Laver, the Dulse, and the Pepper Dulse.

# Digest of the Mortality Statistics

We have recently received from the United States Census Bureau the mortality statistics for 1917. A notable thing shown by this report is that tuberculosis is increasing.

Pneumonia is also increasing more rapidly than tuberculosis, and death from diseases of the heart and blood vessels is increasing still more rapidly. The Ohio Public Health Journal for August, 1919, presents an admirable summary of the report, which we herewith give in condensed form.

SUMMARY OF 1917 DEATH STATISTICS FOR REGISTRATION AREA IN CONTINENTAL UNITED STATES

| Cause | Number of Deaths | Rate per 100,000 Population | Percent of Total |
|---|---|---|---|
| All Causes | 1,068,932 | 1419.4 | 100.0 |
| Organic diseases of the heart | 115,337 | 153.2 | 10.8 |
| Pneumonia (all forms) | 112,821 | 149.8 | 10.5 |
| Tuberculosis (all forms) | 110,285 | 146.4 | 10.3 |
| External causes | 81,953 | 108.8 | 7.7 |
| Acute nephritis and Bright's disease | 80,912 | 107.4 | 7.6 |
| Cerebral hemorrhage (apoplexy) | 62,431 | 82.9 | 5.9 |
| Cancer | 61,452 | 81.6 | 5.8 |
| Diarrhea and enteritis | 59,504 | 79.0 | 5.6 |
| Congenital debility and malformations | 56,973 | 75.5 | 5.3 |
| Arterial diseases—atheroma, aneurism, etc. | 19,055 | 25.3 | 1.8 |
| Influenza | 12,974 | 17.2 | 1.2 |
| Diabetes | 12,750 | 16.9 | 1.2 |
| Diphtheria | 12,453 | 16.5 | 1.1 |
| Bronchitis | 12,311 | 16.3 | 1.1 |
| Measles | 10,745 | 14.3 | 1.0 |
| Typhoid fever | 10,113 | 13.4 | 0.9 |
| Appendicitis and typhilitis | 9,429 | 12.5 | 0.9 |
| Respiratory diseases other than pneumonia and bronchitis | 9,238 | 12.3 | 0.9 |
| Hernia and intestinal obstructions | 8,677 | 11.5 | 0.8 |
| Cirrhosis of the liver | 8,569 | 11.4 | 0.8 |
| Whooping cough | 7,837 | 10.4 | 0.7 |
| Puerperal affections other than puerperal septicemia | 7,317 | 9.7 | 0.7 |
| Meningitis | 6,890 | 9.1 | 0.6 |
| Puerperal septicemia | 5,211 | 6.9 | 0.5 |
| Rheumatism | 4,456 | 5.9 | 0.4 |
| Scarlet fever | 3,141 | 4.2 | 0.3 |
| Erysipelas | 2,866 | 3.8 | 0.3 |
| Malaria | 2,387 | 3.2 | 0.2 |
| All other defined causes | 147,235 | 195.5 | 13.8 |
| Unknown or ill-defined causes | 13,610 | 18.1 | 1.3 |

The total number of deaths for the year 1917 as shown by the report was more than 1,000,000, representing the death-rate of 14.2 for one thousand of the population.

"Of these deaths, nearly one-third were due to three causes—heart disease, pneumonia, and tuberculosis; nearly another third resulted from the following nine causes: Bright's disease and nephritis, apoplexy, cancer, diarrhea and enteritis, arterial diseases, influenza, diabetes, diphtheria, and bronchitis. The death-registration area of the United States in 1917 comprised twenty-seven States, the District of Columbia, and forty-three cities in non-registration States, with a total estimated population of 75,000,000, or about seventy-three per cent of the estimated population of the United States. (The territory of Hawaii has recently been added to the registration area, but the figures given in this summary relate only to continental United States.)

"The deaths from heart diseases (organic diseases of the heart and endocarditis) numbered 115,337, or 153.2 per 100,000 of population. The death-rate from this cause shows a noticeable decrease as compared with 1916, when it was 159.4 per 100,000. There have been fluctuations from year to year, but in general there has been a marked increase since 1900, the earliest year for which the annual mortality statistics were published, when the rate for heart diseases was only 123.1 per 100,000.

"Pneumonia (including broncho-pneumonia) was responsible for 112,821 deaths, or 149.8 per 100,000.. This rate, although much lower than that for 1900 (180.5) or for several succeeding years, is higher than that for any year during the period 1908-1916. The lowest recorded rate for pneumonia was 127 per 100,000 in 1914. The mortality from this disease has fluctuated considerably from year to year since 1900, the general tendency having been downward until 1914, upward from 1914 to 1917.

"Tuberculosis in its various forms caused 110,285 deaths, of which 97,047 were due to tuberculosis of the lungs. The death-rate from all forms of tuberculosis was 146.4 per 100,000, and from tuberculosis of the lungs, 128.9. The rate from tuberculosis of all forms declined continuously from 200.7 per 100,000 in 1904 to 141.6 per 100,000 in 1916, the decrease amounting to nearly 30 per cent; but for 1917 an increase is shown. Until 1912 more deaths were due to tuberculosis than to any other single cause, but in that year and during the period 1914-1917 the mortality from tuberculosis was less than that from heart diseases, and in 1917 it fell below that of pneumonia also.

"Bright's disease and acute nephritis caused 80,912 deaths, or 107.4 per 100,000. The mortality rate from these diseases has increased from 89 per 100,000 in 1900, with some fluctuations from year to year, and since 1914 the increase has been continuous.

"Apoplexy was the cause of 62,431 deaths, or 82.9 per 100,000. The rate from this disease increased gradually, with occasional slight declines, from 1900 to 1912, and since 1913 the increase has been continuous.

"Cancer and other malignant tumors caused 61,452 deaths, of which number 23,413, or 38 per cent, resulted from cancer of the stomach and liver. The rate from cancer has risen from 63 per 100,000 in 1900 to 81.6 in 1917. The increase has not been continuous, there having been three years—1906, 1911 and 1917—which showed declines as compared with the years immediately preceding. The decrease in 1917, as compared with 1916, however, was very slight—from 81.8 to 81.6. It should be borne in mind that at least a part of the increase in the death-rate from cancer may be apparent rather than real, being due to a greater degree of accuracy in diagnosis and to greater care on the part of physicians in making reports to registration officials.

"Diarrhea and enteritis caused 59,504 deaths, or 79 per 100,000. The rate from this cause has fallen somewhat in recent years, having been 90.2 in 1913, and is much lower than the corresponding rate for 1900, which was 13.2. More than four-fifths of the total deaths charged to these causes in 1917 were of infants under two years of age.

"Arterial diseases of various kinds—atheroma, aneurism, etc.,—resulted in 19,055 deaths, or 25.3 per 100,000. The rate from these causes increased continuously from 6.1 in 1900 to 25.6 in 1912, since which year it has fluctuated somewhat without showing any pronounced change.

"Influenza was responsible for 12,974 deaths, or 17.2 per 100,000. This rate is the highest shown for any epidemic disease in 1917, but is much lower than the corresponding one for the preceding year, 26.4 per 100,000. The influenza rate, which fluctuates greatly, was higher in 1901, when it stood at 32.2, than in any subsequent year prior to the occurrence of the recent epidemic.

"Deaths from diabetes numbered 12,750, or 16.9 per 100,000. The rate from this disease, although slightly lower than in 1916, has risen almost continuously since 1900, when it was 9.7.

"Next to that of influenza, the highest rate appearing for any epidemic disease in 1917 was for diphtheria, 16.5 per 100,000, representing 12,453 deaths. The rate from this disease was somewhat higher in 1917 than in the preceding year, when it stood at 15.5 per 100,000.

"Bronchitis caused 12,311 deaths, or 16.3 per 100,000. This rate is lower than that for any preceding year except 1916, when it was 16.2. The proportional decline from 1900, for which year the bronchitis rate was 45.7, to 1917, amounting to 64 per cent, was greater than that shown for any other important cause of death.

"Typhoid fever resulted in 10,113 deaths, or 13.4 per 100,000. The mortality rate from this cause also has shown a remarkable reduction since 1900, when it was 35.9, the proportional decrease amounting to 63 per cent. This highly gratifying decline demonstrates in a striking manner the efficacy of improved sanitation and of the modern method of prevention—the use of the anti-typhoid vaccine.

"Measles, whooping cough and scarlet fever were together responsible for 21,723 deaths of both adults and children, or 28.8 per 100,000. The rates for the three diseases separately were 14.3, 10.4 and 4.2, respectively, as compared with 11.1, 10.2 and 3.3 in 1916. As in 1913 and 1916, the deaths due to measles outnumbered those resulting from either of the other diseases, but in 1914 and 1915 whooping cough caused the greatest mortality. In every year since and including 1910, as well as in several preceding years, measles has caused a greater number of deaths than scarlet fever.

"Deaths due to external causes of all kinds—accidental, suicidal, and homicidal—numbered 81,953 in 1917, corresponding to a rate of 108.8 per 100,000 population. The greatest number of deaths charged to any one accidental cause—11,114, or 14.8 per 100,000—is shown for falls. The rate for this cause varies but slightly from year to year. Next to falls, the greatest number of accidental deaths resulted from railroad accidents and injuries. Burns—excluding those received in conflagrations and in railroad, street-car, and automobile accidents—were responsible for 6,830 deaths, or 9.1 per 100,000. Deaths from automobile accidents and injuries in 1917 totaled 6,724, or 8.9 per 100,000 population. This rate has risen rapidly from year to year, but not so rapidly as the rate of increase in the number of automobiles in use. The number of suicides reported in 1917 was 10,056, or 13.4 per 100,000. This rate is the lowest shown for any year since 1903."

# Tappa Cloth

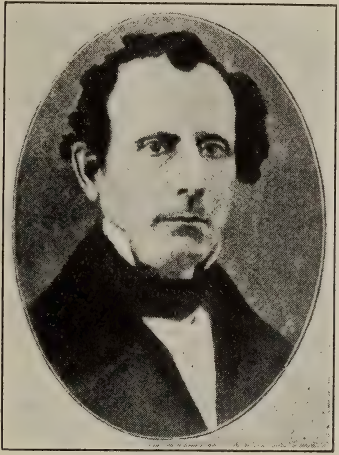
The making of tappa cloth is said to be the only tedious occupation which falls to the lot of the women of the Marquesan Islands. The tappa cloth is made from the bark of various trees, the best quality being made from the bread fruit tree.

J. W. Church thus describes, in the *National Geographic Magazine,* the process of making tappa cloth:

"The manufacture of the fabric was simple. A sapling or branch two or three inches in diameter was used. The bark was slit with a sharp stone and peeled off, then cut in two lengthwise, each piece about 12 inches long. This strip of bark was then laid on a flat stone and gently but firmly beaten with a tappa stick, a short club with corrugated sides, until its fibers spread to an incredible length and width. While in this almost pulpy state, the next piece beaten out would be tapped into the edge of the first, and so on until sheets sometimes 30 and 40 feet square were made and joined without a seam. The cloth was then laid in the sun to bleach, its deep rich brown turning a creamy white in the process, after which it was sometimes dyed with vegetable stains.

"The resulting fabric was a very thin but surprisingly durable one, to be used for loin cloths and girdles—when any were worn—for covering on chilly nights, and other household purposes. Its name, as will be readily perceived, is derived from the tapping sound made on the stone by the wooden pounder."

# The Life of Sylvester Graham



Sylvester Graham
(*middle age*)

The following account of the life and work of Sylvester Graham, written by a personal friend and acquaintance, the late Rev. William Penn Alcott, especially for Good Health, and published in this Journal nearly twenty years ago, is of sufficient interest to bear republication at the present time, when the labors of this great reformer are appreciated more than ever before.

We are to review the life of an eminent pioneer in diet reform. Of scholarly inheritance and philosophic mind, a diligent and profound student, he was gifted with fervid and persuasive eloquence, as well as a love of humanity and a self-consuming zeal in laboring for the welfare of men, that made his rather short life a most potent factor for better living. Our books of reference usually leave but an inadequate impression of this noble career—if they notice it at all. Let us briefly recall the biography:

"The old town of Suffield is in Connecticut, on the west bank of its great river, and adjoining the Massachusetts line. Here was born, in 1794, to Rev. John Graham, an emigrant from England, and a graduate of Oxford, his seventh and last child, our Sylvester. The father was seventy at the time, and soon left the delicate boy to a mother worn with care and trouble, even to the verge of insanity, in consequence of which she was obliged to commit the care of this child, for the most part, to his older brothers and an uncle.

"For some years, Sylvester ran wild; then he was given the work of a farm laborer—both experiences being good for a frail child, who inherited from his father dyspeptic and rheumatic troubles so serious that it was thought his life would soon end. A little schooling was followed by an attempt to learn paper making, more farming, traveling with a horse dealer, and clerking. At sixteen, symptoms of consumption appeared, and he was again sent into the country. Foolish and unfortunate love affairs at this time, and for some years later, preyed upon his spirits, and aggravated his physical troubles.

"Till this time our subject had appeared a thoughtless, rattle-headed, crazy boy; cheerful, wild, and extravagant; yet, in reality, deep and philosophic thought often occupied his mind, even from his earliest childhood. In his nineteenth year he began a religious life, and, as one fruit, set out in good earnest to cultivate his mind. After hard study for a few months, at the suggestion of his schoolmaster, he taught some time, till illness stopped him. Thus studying, teaching, recuperating, he reached the age of twenty-nine, when he entered Amherst College with the ministry in view.

"At college, Graham easily kept up with his class in spite of nervous headaches and other ailments. But his powers of elocution were so great, and his oratory was so impressive and fervid that—mainly from envy—he was denounced as 'a stage actor and mad enthusiast.' At the same time he was popular in outside society, since he could write poetry, draw good likenesses, and take the lead in all gayeties.

"Envy of his eloquence and of his other gifts rapidly became malignant, and finally charged him, most falsely, with a criminal assault, on which charge he was expelled from college. Serious illness was caused by this hasty and unjustifiable treatment, but Graham was wisely cared for by two kind ladies, one of whom, a Miss Earle, he married after his recovery. In the same year (1826) he became a preacher in the Presbyterian church, attaining considerable popularity in his ministry of a few years.

"It was in 1830 that, being much interested in the temperance reform, he was engaged as a lecturer by the Pennsylvania State Temperance Society. Into this work he entered with his whole soul. Seeking the causes of alcoholic vice, he studied deeply human physiology and kindred subjects, and soon struck the trail he was to follow the rest of his life. The evil effects of a flesh diet are said to have been suggested to him by the Bible Christians of Philadelphia, and their pastor, Rev. William Metcalf. This church, holding vegetarian principles, had come from England in 1817, and Graham must certainly have soon learned their views.

"In some such way, our subject was led to an investigation of the relation of food to alcoholism, and then to disease in general. He says that he was as surprised as any one could be, at the conclusions to which he arrived. After lecturing about six months, he resigned his agency, but was persuaded to give a course of lectures, in March, 1831, at the Franklin Institute in Philadelphia, on 'Human Physiology, Diet, and General Regimen,' and before these lectures were finished he was invited to repeat them at Clinton Hall, New York, in June of the same year. Calls for them soon came from every quarter, and for some twenty years (1830 to 1850) Graham was a power in our land through these lectures, delivered with great enthusiasm and eloquence in most of the large cities of the Eastern States.

"The disuse of flesh as food soon acquired the name of 'Grahamism,' and its advocates and disciples were Grahamites—the word 'vegetarian' not being used till years later. 'Graham,' as the name for whole-wheat meal and bread made thereof, is a monument to Sylvester Graham that may endure for centuries, for, from his studies he soon had the wisdom to discern that the exclusive use of bolted flour was a great evil. In his 'Treatise on Bread and Bread Making,' and in his lectures, he urged this reform, and indeed initiated it.

"Persecution, ridicule, controversy, only advertised his ideas and his name. He met much opposition from butchers and bakers, and as late as 1847, when he was lecturing in Boston, a mob was created by the latter class, which it was beyond the power of the mayor to quell. It was finally subdued by his own followers, who shoveled slacked lime upon the crowd from the windows of the lecture hall.

"About 1835, Graham secured a home for his little family at Northampton, the Meadow City' of New England, famous for its large and historic elms and its rich alluvial soil along the Connecticut River, in a valley where, alas! 'the best tobacco in the world was raised.' Here, on his native river, in another State, but scarce twenty-five miles away from his birthplace, he made his home through his remaining years. His house still remains, in part, on Pleasant Street, and his grave is easily found in the chief cemetery of the city. He had a fine garden, which he delighted to cultivate in his last years. Even those who hated his reforms admit that 'he was a loved and honest citizen, interested in the public welfare.'

"His life seems shorter than it should have been, for at his death, Sept. 11, 1851, he was only fifty-seven. The 'post-mortem' revealed no serious disease, but as Graham had often urged that his system favored longevity, and suggested that human life should at least round out a century, his own rather early death was a shock to his disciples, and a decided set back to the cause.

"But it has been observed that our subject had a feeble constitution by inheritance, and that his life did not add much to its vigor till manhood was reached. Graham was nearly forty when he began to practice his own dietetic ideas. He was extremely regardless of his need of sleep and relaxation. In his enthusiasm for the welfare of humanity, in studying and lecturing, he 'burned his candle at both ends.'

"He was of a constitution and temperament which naturally rendered him mentally precocious and predisposed to nervous and scrofulous maladies. Few, if any, public men with such a temperament have been as healthy or lived as long as he.' It appears that he was not sustained in his public work by happy co-operation in the domestic relations of his life. There is reason to think that in the feebleness and hypochondria of his last days, and under the pressure of friends and physicians, he allowed himself to be fed and dosed 'as he would not.' But a man should not be judged by what is forced upon him in the sufferings and helplessness of approaching death. If men who die for their country in war are heroes, much more one who goes forth alone to offer himself on the altar of universal human welfare. Nevertheless, Graham, as much as we, believed theoretically that it was better to be 'a living sacrifice.'

"Our subject had four children, two of whom, with his wife, survived him. His work is well summed up by another: 'If Graham failed to establish a system of dietetics, he at least modified the then prevailing habit of the excessive use of meat by proving that muscular strength does not depend on its consumption. He popularized the use of unbolted flour, and paved the way for the large use of cereals and fruit which afterward obtained.'

"A list of all Graham's publications is desirable, with a fuller description of some of them. First issued was his 'Lecture on Epidemic Diseases, Particularly Spasmodic Cholera,'— a lecture given in New York City during the prevalence of the disease especially named, and frequently repeated there and elsewhere. His pamphlet was printed in 1833, and again in 1838, but is now found in few libraries.

"The 'Aesculapian Tablets' appeared in March, 1834, and was printed in Providence. Under this title were gathered letters and abstracts of letters from about fifty persons, exhibiting the effects of the 'Graham System,' in its application to invalids. Ninety-six pages, without a cover, make this modest work with its ambitious title.

"Next comes the 'Lecture to Young Men on Chastity,' with editions in 1834 and 1837, one of which can be found in most large libraries of the Eastern States. This book aroused wide attention, and was the beginning of many publications and lectures in its line.

" The 'Treatise on Bread and Bread Making' probably came in along here, but the writer has never been able to find a copy, or even learn its exact date.

"Sylvester Graham's classical work was his 'Lectures on the Science of Human Life,' printed in two volumes in 1839 and, in the last edition of 1877, in one volume of rather small type and 651 pages with an index. Fowler and Wells sent forth this last edition, and it is still on sale. Of its twenty-three chapters, the first eight give an excellent popular presentation of the anatomy and physiology of the body, followed, in two chapters, by a profound discussion of the intellectual and moral nature of man. Then a consideration of longevity, food, and the arguments for 'Grahamism' occupy the remainder of the book. In the preface the author claims to have observed and thought upon these themes 'for more than forty years,' which as it may seem, would be from the age of four or five! He had given to this work, he says, ten years of such assiduous labor that he believed it would shorten his life 'in no small measure.' This proved too true.

" 'The Philosophy of Sacred History' was originally issued in magazine form, two parts in 1842, one in 1846, and one remained as a manuscript till his death. The whole was edited by Rev. F. L. Clubb, and issued by the publishers of the work just mentioned, in 1855, as a book of five hundred and eighty pages. It is now out of print. This was a duo-decimo, and none of Mr. Graham's books was of larger size.

"There follow, in pamphlet form, a 'Letter to Daniel Webster on the Compromises of the Constitution,' dated June 3, 1850, and an 'Address,' occasioned by the visit of some military organization.

"The *Graham Journal of Health and Longevity* contains numerous communications from our subject, but was edited by David Campbell. It was carried through 1837 and the two following years, and in 1840 merged in Dr. N. A. Alcott's *Library of Health.*

"Aside from his 'Introduction to a Life of Cornaro,' and letters in a few other books and journals, the above appears to be a complete list of Graham's printed works. Special consideration of one of these rarely to be found, and because it shows, more than any of the others, the admirable spirit of the man. Its full title is, 'The Philosophy of Sacred History Considered in Relation to Human Aliment and the Wines of Scripture.'

"About three-fourths of the work before us is devoted to the Old Testament, taking up the Hebrew words and going into the matter deeply and philosophically. The views in general presented are not at present novel, but are such as are held by most Christian vegetarians. The author finds in the first part of the Bible the 'permission' to eat flesh and drink wine were at the time the necessary adaptations of the divine administration to the state and condition of man as a free moral agent.'

"As to the New Testament, his conclusions may be gathered from the following quotation: 'In regard to the diet of our Saviour, it is very certain that he was extremely plain, simple, and abstemious in his food, and very seldom, if ever, ate flesh. On two occasions, it is said, he ate a little fish; but one of those times, at least, it was not for the sake of nourishing his body, but to convince his disciples of his real resurrection and bodily presence, and then he used the fish because there was no other food present. At any rate, the dietetic habits of our Lord, when all circumstances are properly considered, cannot, as a general fact, be said to be contrary to the doctrine of my lectures, but rather confirmatory. And it is an interesting consideration, that notwithstanding the boldness with which our Lord rebuked error, and the severity with which he censured the scribes and Pharisees and Sadducees, he expressed not the least disapprobation of the Essenes, who were at that time a considerable sect among the Jews, and who strictly abstained from wine and all intoxicating substances, and from animal food.'

"He argues 'that the health and happiness of the body of a man are truly a final cause of the gospel economy as the salvation of the soul; and that such is the compound nature of man that the highest and best interests of the soul cannot be secured while the true interests of the body are violated.'

"A touching prayer for the sanctification of all believers is found near the end of this, his last book, and with the following words he closes his work: 'What I have said I now commend to God, and pray that He will bless it to the world, and most especially to the church of our dear Lord and Saviour Jesus Christ; and make it instrumental of much good in quickening all true believers to higher attainments in holiness, and in carrying forward the great cause of truth throughout the world; to the glory of God in the highest, and on earth, peace and good will toward men.' "

# For Your Health—Make a Garden

(Second Article)

R. V. ASHLEY

"Hail, bounteous May, that doth inspire
Mirth and youth and warm desire!
Woods and groves are of thy dressing,
Hill and dale doth boast thy blessing."
—*Milton.*

In gardening operations, March essentially is the month of indoor planning, April the month of active outdoor preparation, and May is the month of all the months for open ground planting. It is in the month of May, in temperate climes, when all the forces of Nature seem to connive and conspire to create in the gardener the maximum of enthusiasm for his work. The mornings and evenings often are cool enough to urge one to such physical exertion as will quicken the circulation, warm the body and tire the muscles; the middays are warm enough to induce that free perspiration which is necessary to a proper physical housecleaning. The young sprouts, forcing their way upward from the tombs in which the seeds have been buried, by accident or design, through the dark earth, "climb to a soul in the grass and the flowers." The migrating and nesting birds, from every bush and tree pour out their little hearts in the full tide of cheerful song. And speaking of trees, particularly of our deciduous fruit-trees—

"Waist deep in fragrant meadow grass,
  A kindly company are they;
And what is richer than the mass
  Of bloom that buries them in May?"

Truly now is the time when Mother Nature opens wide the throttle and runs on high until the warm days of July announce the zenith of the year. And we must hasten intelligently if our garden fully shall live up to its opportunities and keep abreast with the rapid march of growing things.

## The 1920 Garden as an Economic Factor

Without question the world war—that epic spasm of civilization—has been a most potent factor contributing to the present high cost of living. The cost of the war if confined to the population of this country would mean a tax of $1,826 on every man, woman and child in the United States. Government reports indicate that the acreage planted to winter wheat last fall was 30% less than the year before. In many sections of the country, there is a reduction of more than 25% this year in acreage devoted to food production. In what better way can you help to reduce living costs than by planting, raising and harvesting your own garden? Not only will a garden provide the very best of garden stuffs for your own table, but it will increase by that much the sum total of the food production of the country, which is alarmingly short, and you will at the same time enter the ranks of the producers.

Food costs in 1920 are double those of 1914. But the food you raise in your own garden will cost little if any more than six years ago. Scarcity of labor and resulting higher labor costs mean smaller market gardens and further diminished food supplies. Higher prices will be the natural result. A century ago eighty per cent of the population lived upon the farms of the country and were producers of food. Today less than thirty-five per cent of the population are thus engaged and largely must be depended upon to produce food for the masses who live in cities. Most emphatically let me say it—true patriotism today *demands* that every man who has or can obtain a plot of ground shall do his duty in raising a thrift garden and in urging and helping his neighbors to do likewise. In this way he will add to his own and his neighbor's usefulness in the community, will contribute no small amount to the sum total of food production, and thereby himself will live better, at smaller cost, and will help to keep the general costs of living within due bounds.

So resolve this moment to make *your* garden a little larger, if possible, certainly a little better; make it more intensive and more continuous; more productive and better utilized.

If your garden has been properly planned, and if you have planted and are planting as you have planned, every day in the year will see your table the richer and yourself and family the healthier from the food products of your own raising.

May means the beginning of certain general work which must be continued throughout the season to insure tidy gardens. If first the ground has been thoroughly prepared, thorough cultivation—at least once a week, better twice weekly—will keep down the weeds and maintain a dust mulch so that the effects of drought hardly will be noticed. Thin the young plants as soon as the seedlings are large enough to handle and before crowding begins. When it is necessary because of dry weather to water the garden, do it thoroughly and only in the evening. Keep a close watch for plant lice and deal with them promptly. When the leaf crops are about half grown, give them a dressing of nitrate of soda at intervals of ten days to two weeks, repeating the application two to four times. Harvest and use all vegetables while they are still young and fresh. In this way only will you experience real quality in your table vegetables. As soon as a crop is gathered, remove the remains of the plants and at once sow seeds for a later crop.

By the first of the month your garden will be well planted with seeds and plants of the hardier vegetables, and many already will be showing good growth. The list will include the following:

Radishes
Lettuce
Early peas
Early cauliflower (plants)
Early cabbage (plants)
Beets
Carrots
Turnips
Spinach and other hardy greens
Onions
Parsnips
Salsify
Kohl rabi

Seeds of the following sorts are not so hardy and should not be planted in the open ground until May 10th to 20th. Green podded beans are the only exception to this rule. A first planting of them may be made any time after the first of the month. Plants of tomato, eggplant, pepper and sweet potato should not be set out in the open until all danger of frost is past.

Beans
Lima beans
Cucumbers
Sweet corn
Melons
Squash, summer and winter varieties
Brussels sprouts
Pumpkins

Successive sowings of most of these vegetables for summer use may be made at intervals of ten days to two weeks after the first sowing, continuing to August 1st to 15th.

One big secret in successful gardening is to keep the ground constantly busy. If you cannot make two blades of grass grow where one grew before, perhaps you can make two or even three crops grow where one grew formerly. Just as soon as one crop is out of the way, burn the remains of the old plants and sow seeds or set out plants for another crop. Before doing so, however, it is well to turn the soil again, and supply some good commercial fertilizer which should be thoroughly incorporated with the soil. Remember in your re-cropping to practice rotation. That is, do not make another sowing of peas on the same ground from which you have just harvested a crop of peas. In general a root crop, such as radishes, beets, carrots, etc., may follow early peas. Sweet corn also should do well after peas. Beans or peas may follow early cabbage and cauliflower and early beets or carrots. Green vegetables or leaf crops, such as spinach, chard, chicory and lettuce, make excellent follow-crops after peas, beans or early carrots. Root crops do well generally after leaf or green vegetable crops, and *vice versa*.

### Utility Plus Beauty

From a strictly utilitarian point of view a garden may be expected to furnish food for the table and nothing more. But it should be and, fortunately, may be a thing of beauty as well. To paraphrase a common proverb, the useful should be as beautiful as the beautiful. The simplest garden of all is one in which everything is planted in straight rows extending from one end of the plot to the other. And even such a garden, if the rows be straight, the plantings well made and the ground kept in the best of tilth so that no thing called a weed may show its head—may be beautiful in its regularity of arrangement, its cleanliness and the exuberance of its growth. But here is an opportunity to use your imagination, yes, to dream, for even a vegetable garden may be made not only a thing of beauty but even one of loveliness. It is not necessary always to make long straight rows, and even straight rows may be broken up by paths and occasional beds. For some things, when space is considered, may be more economically planted in beds than in rows. And even a little shade now and then may assist rather than hinder the development of perfect vegetable crops. It is true, of course, that most vegetables when growing should have full sun and plenty of it. But there are some, as lettuce for instance, which in warm weather make the best showing only when well shaded from the hot sun.

### Make New Garden Acquaintances

And if you are a dreamer as well as a utilitarian, and if you have imagination and the spirit of progress, you will of course try some of the many new or little known vegetables which may or may not be listed in the seasons' catalogs. It is not yet too late to obtain the seeds or even plants of many of the new introductions or little known sorts that add a very distinct and pleasing variety not only to our summer tables but also to the list of vegetables for winter storage. Every year brings offerings of many new varieties of the older forms of vegetables and garden fruits and with them a thinner sprinkling of new and desirable vegetables from other countries, where they are much esteemed and in common use. Our Uncle Sam maintains in the Department of Agriculture, at Washington, a Bureau of Plant Industry, whose chief duty it is to test out the newer things in food plants and then introduce the deserving among them to the ultimate consumer, either directly by sending seeds to progressive gardeners who will give them a fair trial, or by furnishing the better seedsmen and nurserymen with supplies of seeds or plants. They in turn build up ample stocks with which to supply the demand of a curious or educated public.

I shall list here a number of the newer offerings in vegetable seeds and plants; and if you are an enthusiastic gardener—one who finds delight and satisfaction in every step of the growing process from the planting of the seed to the preparation for the table and finally the gustatory enjoyment which is the end of every good vegetable and fruit—you will yourself this year make the acquaintance of a number of new forms of growth and new table delights which will repay you many fold for all your expenditure of money, time and space.

*The Soy Bean.* This is a vegetable of almost universal use in China and Japan, but as yet practically unknown in America, though probably it is destined to occupy a large place in our food supply of future years. Of the one thousand known varieties of this bean, five hundred have been tested in this country. Of these not more than forty or fifty varieties have proven to be profitably adapted to our conditions of soil and climate. Most of these require too long a season to mature ripened seed in the North, but there are a few varieties which will ripen well in our comparatively short season. But in order to raise and enjoy this new vegetable it is not necessary that ripened seeds should be produced. Some varieties may be gathered and cooked as green beans, pods and all, but I wish to mention especially one variety called *Hah-to* (the name indicates its Japanese origin) which in the half-grown state may be shelled and used as one would use any other green shelled beans. The seed of this variety is much larger than the average of Soy beans and of a different shape, resembling closely a small lima bean. If you know the delicious flavor of the green lima bean, you will be agreeably surprised with this Hah-to variety of the Soy bean used in a similar way. Indeed, it possesses even to a greater degree than does the green lima that sweet, melting, buttery flavor which has made the latter always so much in demand by epicures. The plant growth of most Soy beans more closely resembles the growth of alfalfa than that of ordinary beans.

Another and more recent introduction from Japan is the Mitsuba *(Deringa Canadensis)* which is closely related to celery and parsnips but differs from both in the fact that every part of the plant—roots, stems and leaves—is used as food. In Japan it is said to be very popular with all classes of people. The crop is raised from seed and is said to do best in light soil. The seed is sown and the growing plants are handled much like celery, with the exception that if the blanched shoots are desired, they are obtained by winter forcing rather than by blanching in the field. The ease of growth and the fact that leaves, shoots and roots may all be eaten and may be prepared in a variety of ways should make this a very popular vegetable in America when its merits become widely known. The blanched stems and leaves are delicious either raw with salad dressing or finely chopped and used as flavoring for soups, or may be boiled whole and served with white sauce like asparagus. The roots may be served in any way in which carrots and similar root vegetables are used. They make a delicious dish cooked in oil and butter and served with tomato sauce. In Japan, Soy sauce is commonly used as a dressing. Doubtless many new recipes will be developed in this country for the use of this valuable new vegetable.

*Celeriac.* This too is a vegetable well known to Europeans but little used in this country. The top looks much like celery and the leaves may be used as a flavoring for soups. But it is the fleshy root which gives the vegetable its place among comestibles. The root is apple shaped, has a distinct celery flavor, and is very tender and sweet if rapidly grown. The seeds should be sown in rows in April and the young plants thinned to stand about six inches apart. The roots should be ready for use about September 1st. They may be lifted and stored in sand for winter use. The best variety is large Erfurt.

*Curled Chervil.* This plant, like parsley, is raised for its leaves, which are used to flavor soups and salads. It is said to be better than parsley in all respects. Its leaves are more silky in texture and altogether more refined. The leaves are also added to salads, sliced cucumbers, radishes and celeriac, and are said to give them all a distinct and delicious flavor. The seeds should be sown in a cold frame in March or they may be sown in rows in the open ground in May. The plants should not be thinned but must be continuously cut to insure a succession of young tender leaves. "If you ever grow it, you will never be without it."

There is another form of plant called the turnip-rooted Chervil. Its leaves may be used in the same way, but it is raised chiefly for its roots, which are turnip shaped and may be stored in sand for winter use.

*Chinese Cabbage*. This vegetable was introduced into this country several years ago. The best known variety is Pai-ts'ai, which has achieved for itself a distinct and popular place in American gardening. It has the great fault, however, of running to seed in hot weather, and therefore must be raised in the cooler periods of the year. A Japanese variety of recent introduction is called Pooting It is claimed that this variety will absolutely head at all seasons and can be enjoyed in the summer as well as in the fall and winter. It does not scald or burn in the hottest weather and is free from all insect pests. It produces the most solid head of its type and single heads frequently weigh as much as fifteen pounds each. This vegetable has a delightful mild flavor and is very valuable used as a salad plant, although it can be cooked like ordinary cabbage and possesses a finer flavor.

*Kohl-rabi*. This is not in any sense a new vegetable but it is entirely foreign to many otherwise fairly complete gardens. If you have never tried it, do so this year. The part that is used is a bulb somewhat similar in shape to a turnip, but the bulb grows above the ground as an enlargement of the stem. The flavor resembles somewhat that of cabbage but is considerably more delicate and refined. The flavor is much improved if the young leaves surrounding the bulb are cooked with it. The bulbs are at their best for table use when about half grown or about one and one-half inches in diameter. Kohl-rabi should be planted a row at a time in frequent succession. It flourishes best in sandy soil and in hot weather.

Golden Bantam corn in flavor is the very superlative of sweet corn. Its chief disadvantage is the small size of the ears. A number of new varieties have appeared which are said to retain all the fineness of flavor of the type but to be more prolific and to bear larger ears, with two or four more rows to the ear.

Whipple's New Yellow is earlier and has larger ears than Golden Bantam.

Red Cob Golden Bantam is said to exceed the parent by far in tenderness and sweetness of flavor but to resemble it in all other particulars except color.

Golden Giant, a hybrid of Golden Bantam, is said to be of the same fine flavor and of the same season, but with more ears to the stalk, the ears averaging three times the weight and bulk of the Golden Bantam. The ears have twelve to twenty rows compared with eight rows of the parent.

Early Giant is a new bush lima bean which matures in so short a season that it may be sown in succession every ten days from May 15th to July 10th It is said that the flavor is extra fine, and the large, luscious beans, which are thick and flat, are produced in remarkable quantity.

Golden Plume celery is said to be rust and blight proof, an excellent keeper, and to show from the seedling stage a marked superiority over all other sorts.

The Scotia pole bean is said to be superior in flavor to any other sort. If supported by poles or by wire netting, a few hills will keep a family well supplied in August and September after the bush beans are gone. It is claimed that one taste of this bean cooked in the green stage will make you a life-long devotee.

King of the Greens is a new French bush bean, "without doubt the sweetest, the meatiest, the most delicious and most tender of string beans."

Bender's Surprise Muskmelon is said to be of superfine quality and flavor. It matures in three months, is a large melon, many specimens weighing ten pounds each, of deep orange flesh, very thick. The flavor is melting and delicious. It possesses the unique distinction among melons of improving in flavor during five or six days after picking. It will keep in good condition for market a week after gathering.

Summer Asparagus is a unique new vegetable which resembles the summer squash in bush and fruit. The fruit should be used when four to six inches in length. If the fruit is not allowed to mature, the bush will continue bearing until frost. Six hills will furnish an ample supply for an entire family.

The Family Bean is a distinct novelty from Japan. It is a pole bean which should be sown in May. It grows quickly and produces in abundance tender, fleshy pods which attain a length of three to six feet. The pods are always delicious and tender no matter how long. The plants bear continuously until frost.

The Pierce Albino is a new tomato practically without seeds, of ivory white skin and paper-white flesh. The plants are robust and healthy, the fruit smooth, large and solid. Large specimens approach a pound each in weight. Imagine a salad composed of head lettuce with mixed slices of white, red and yellow tomatoes. Does your mouth water already? Try it.

The Japanese Artichoke is said to be as much better in flavor as it is different from the well-known Jerusalem Artichoke, and a great favorite wherever known.

Then come the greens. The importance of green vegetables and of just plain "greens" in the dietary is becoming more and more recognized as scientific experimenters develop the facts in relation to this class of foodstuffs. Some day a large book will be written covering fully the various qualities and varieties of "greens" already known and doubtless of many varieties not now known, at least in this country. Suffice it to say now that "greens" either raw or boiled should constitute an important part of the daily ration of every individual, because of their richness in the vitamins and in lime and iron, for lack of which thousands of persons in civilized countries are ignorantly starving themselves of these important elements. Try at least half a dozen of the following varieties of plants, all of which are valuable for use as table greens. Later I purpose to add to this list and to describe in some detail the different sorts of greens available for table use:

- Spinach—
  - Victoria
  - Prickly or winter
  - New Zealand
  - Japanese
  - Rocky Mountain (Orache)
- Braganza Cabbage
- Seven Turnip Top
- Broccoli
- Collards
- Florence Fennell
- Ice Plant (Crystellinum)
- Patience Dock
- Borage officinalis
- Red Spinach
- Swiss Chard
- Mustard
- Corn Salad (Fetticus)
- French Dandelion
- Endive
- Ts'ai or Chinese Endive
- Chicory

But alas, already I approach the limits of my article and have said nothing about what might be termed the gentler sex in gardening—the flowers. Already much of the bloom from early flowering bulbs is past, early tulips are in their glory, and daffodils, mayflowering tulips and German Iris are coming on apace The seeds of annuals should be sown this month out of doors, or if sown earlier under glass the young plants may be transferred to their permanent quarters. We must content ourselves for the present by emphasizing again the fact that this year is to be a year of vegetable gardens par excellence, of utility to help meet the problem imposed by still rising costs of practically everything offered for sale.

But of the flowers there shall be more later. And every day as you work in your garden, whether of vegetables or of flowers, carry a song in your heart. Perhaps it is this:

I must start my garden early
With much of skill and thought;
Must keep it growing rapidly,
As every garden ought.

I must find my health in loving
Garden labor well performed,
That my soul and table too
May be with fullness e'er adorned.

# Our Forest Relative—The Baboon

[In a recent number of that always most interesting and entertaining of monthlies, the *Atlantic*, Mr. Scully gives an interesting account of the Chacma baboon of South Africa, which offers some new and very valuable facts about this interesting next-of-kin of ours.—Ed.]

"The Chacma baboon, when full grown, is about the size of a fairly large mastiff; but in this respect there is considerable individual variation, some old males of comparatively enormous dimensions having been shot. The general color is dark brown.

"The canine teeth are used only in fighting, never for the securing of prey. The baboon seizes its enemy with its teeth, and then with both feet and hands, pushes the victim violently away, thus tearing out the whole piece it has bitten. These canine teeth are terrible weapons, occasionally reaching a length of two inches.

"The baboon feeds mainly upon vegetation, such as fruit, bulbs, fleshy taproots, and the pith of the aloe. It also partakes freely of the fruit and thalli of the opuntia, or prickly pear—a plant which was originally introduced from America, but has now spread over large areas of Southern Africa. The thalli are armed with sharp spines; these can be got rid of without much difficulty, and the fruit is thickly covered with small nests of minute thorns, which become easily detached. So minute and plentiful are these that a human being—even with the aid of a suitable implement—has to exercise considerable skill in getting rid of the tough outer envelope containing them, and thus avoiding a most serious and painful irritation of the mouth and throat. But the baboon just rolls the fruit over a few times in the sand with its paw, and then munches it without apparent inconvenience—a striking instance of the creature's adaptability.

"The baboon is very partial to certain kinds of animal food—scorpions, spiders, centipedes, insects, lizards, and the eggs of wild birds, all being eaten with relish. The scorpion is evidently regarded as a tid-bit. If one is released near a captive baboon, the latter will hold its hand extended over the prey until a suitable opportunity for attack offers. Then the hand will descend with a sweeping slap, which is followed by a swift, circular, rubbing motion. This disables the scorpion, which is then picked up and carefully examined until the sting is located, which is then picked out between finger and thumb, and thrown away as far as possible, after which the scorpion is munched with every appearance of satisfaction.

"On mountains frequented by troops of baboons, most of the stones not too heavy to be moved will often be found to have been recently overturned in the search for prey. It is probable that, owing to the baboons having been driven from the fertile to the more arid regions, they have had to take more and more to an animal diet. The nests of wild bees are often robbed—for both honey and the larvæ. Usually several baboons will combine to raid a nest, which is generally situated in a rock-crevice. One will tear out the combs and scatter them on the ground; then the others will rush in, seize a comb apiece, and scatter. Although distinctly objecting to being stung, the baboon apparently does not suffer so much pain from a bee-sting as does a human being.

"It is somewhat remarkable that, although a baboon in captivity will not eat raw meat unless extremely hungry, it will eat with avidity meat which has been cooked. Since the large extension of sheep-farming and the consequent restriction of their natural food-supplies, baboons in some parts have developed the habit of raiding flocks in the lambing season and tearing open the stomachs of the lambs for the sake of the milk which these contain. This practice has led to the virtual extermination of baboons over large areas. However, in justice to the raiders it should be noted that it is only when food is scarce indeed that this criminal practice is indulged in.

"But it is not only in respect of killing lambs that the baboon does damage. The nests of wild as well as domesticated ostriches are apt to be pillaged. The eggs are either fractured by being knocked against each other, or else they are rolled or carried away to be smashed against the nearest suitable stone. Fruit orchards and maize-fields also suffer, especially the latter, for the orchard is usually near the homestead, while the maize-field is not, and in these days baboons seldom approach the dwellings of Europeans, owing to their dread of firearms. But the maize crops of the natives dwelling in and cultivating the gorges between the foothills of the lofty Drakenberg range are often badly plundered. The alleged manner of plundering implies a high degree of intelligence. I have not personally seen it in operation, but the accounts given by the natives on the subject are so widespread and so circumstantial that one can hardly doubt their genuineness. It is said that a troop of baboons will steal silently down to some suitably situated patch of forest or scrub, and from there form a chain to the maize-field. Along this chain the maize-cobs are passed from hand to hand. When a sufficient supply has been accumulated, the baboons, each carrying several cobs under one arm, scatter and retreat up the mountain-side. The natives have no firearms, so, even if the marauders are discovered, they can easily escape. A well-grown baboon is more than a match for any dog available. Nevertheless, a combat with a dog is always declined if possible, unless the females or the young are interfered with.

"The commonest sound made by the baboon is something between a deep bark and a short roar. 'Hoch,' or 'Hoach,' somewhat drawn out, might express it. I have occasionally heard them utter some such sound as 'Hoahaouw.' But when one develops intimacy with a tamed baboon, it becomes clear that its vocabulary includes several sounds, indicative not alone of satisfaction or the reverse, but of a desire to communicate ideas. These sounds are of varying inflection and intonation, and are accompanied, not only by appropriate changes in the animal's facial expression, but by various gestures of undoubted meaning.

"The minor sounds uttered by these creatures cannot be expressed in terms of the alphabet; they are generated mainly somewhat deep down in the throat. Personally, I am convinced that baboons possess a rudimentary language—if that term may be permitted for a system in which gestures and change of facial expression play a greater part than sound.

"The ordinary gait of the baboon is a deliberate walk, all four limbs being used. When in a hurry, this breaks into a sort of canter. But the real dynamics of locomotion are provided by the hind limbs. This is shown by an examination of the tracks left in sand, where the print of the foot is more than twice as deep as that of the hand. In the canter the main function of the hand appears to be of a steadying nature. My own view is that the baboon's mode of locomotion is in a transition stage between going on all fours and walking upright. They often stand up when taking observations from the top of a rock, and will walk erect when carrying a load, if the latter entails the use of both front limbs. The tail curves upward for about one-third of its length, the remaining two-thirds swaying as the animal moves.

"When a troop is out foraging, sentinels are posted on commanding points, and the older animals form flanking and rear guards. The front is unprotected, but is under observation by the sentinels. On one occasion, when stalking a troop of buck in a very hilly country, I came suddenly in sight of a sentinel posted upon a high rock. The troop to which he belonged was not visible to me. The sentinel stood up to his full height, uttered a warning shout, and pointed to me with extended arm. It was clear that this was done for the purpose of indicating to the troop where I was.

"All snakes, whether poisonous or not, are equally feared by baboons. This is somewhat strange in view of the circumstance that the latter can at once distinguish between berries that are wholesome and those that are poisonous, even though they may never have seen them before. The hiss of a snake will reduce the most enraged baboon to a state of abject terror, and a dead snake placed in the vicinity of one will drive it almost distracted.

"In the arid, barren uplands of the Cape Province, baboons suffer badly from thirst in seasons of drought. When traveling through the Karroo region by rail, I have seen them digging for water in a dry river-bed; they apparently excavated to a depth of some three feet. The train passed within less than fifty yards of them, but they did not even desist from their work. In seasons of great scarcity they have been known to venture down to the seashore and eat shellfish.

"The baboon is a long-lived animal; his span of life is probably nearly equal to that of man. Maturity is reached when they are about fifteen years old, but their muscularity appears to increase indefinitely. In captivity the temper of a baboon becomes much soured after maturity has been reached; but when young they make playful and entertaining pets, being very good-natured toward those to whom they are accustomed or who treat them with kindness.

"Le Vaillant, in writing in 1782, gives a most entertaining account of Kees, the tame baboon which accompanied him on his travels. Kees was not only an incorrigible thief, but was exceedingly greedy: he constantly refused to share with his master any of the edible roots or fruit which he discovered. Yet his other qualities were so engaging that these faults were excused.

" 'As he was extremely familiar, and attached himself to me in a particular manner, I made him my taster. When we found any fruit or roots unknown to my Hottentots, we never touched them until my dear Kees had tasted them; if he refused them, we judged them to be either disagreeable or dangerous, and threw them away. I often carried him along with me in my hunting excursions. . . . When we could not find gum or honey, he searched for roots, and ate them with much relish, especially one of a particular species, which unfortunately for me, I found excellent and very refreshing, and which I greatly wished to partake of. But Kees was very cunning; when he found any of this root, if I was not near him to claim my part, he made great haste to devour it, having his eyes all the time directed toward me. By the distance I had to go before I could approach him, he judged of the time he had to eat it alone, and I indeed arrived too late. . . . to tear up these roots he pursued an ingenious method, which afforded me much amusement. He laid hold of the tuft of the leaves with his teeth, and pressing his forepaws firmly against the earth and drawing his head backwards, the root generally followed. When this method, which required considerable force, did not succeed, he seized the tuft as before, as close to the earth as he could; then, throwing his heels over his head, the root always yielded to the jerk which he gave it. . . . In our marches, when he found himself tired, he got upon the back of one of my dogs, which had the complaisance to carry him for whole hours together.'

"The most remarkable instance of simian intelligence which has come under my personal observation was that of a baboon which did duty as pointsman at the important railway junction of Uitenhage, in the Cape Province. This animal was owned by the man who worked the points, but who had had both legs cut off in a railway accident. On the platform in his charge there were six levers, to each of which was given a name. The man sat in a little wooden cabin with his understudy, and whenever a lever required shifting, he would call out its name. At once the baboon would swing the lever over. After he had been thoroughly instructed, he was never known to make a mistake. In the morning he ran his master down to the scene of his work on a little hand-trolley which, on arrival at its destination, the baboon shifted from the line and stowed away. At night he replaced the trolley on the line and, when his master had taken his seat, pushed it home again. Most of the journey to the scene of the work was down grade. On reaching the slope the baboon would spring upon the vehicle and evince the liveliest satisfaction as it skimmed along by gravitation.

"There are several instances of baboons having been trained to the calling of shepherd. In a case which came under my personal observation the baboon had several hundred sheep in his charge. He became passionately attached to the members of the flock, remained with them all day long when at pasture, and brought them back to the corral in the evening.

"These creatures invariably develop an absorbing affection for any young animals, human or other, placed in their charge. There is one well-authenticated instance of a motherless Kaffir infant being taken in charge by a baboon and guarded night and day for upwards of two years. With the exception of feeding the child, every necessary function was performed by the simian foster-parent."

# The Physiologic Advantages of a Vegetarian Diet

Prof. E. Gley, quoted by J. Madison Taylor in the *Medical Times,* recommends a vegetable diet because of three special advantages which it offers:

"It is poor in elements giving rise to uric acid, which is an important factor in view of the prevalence of arthritis; it facilitates the disuse and still more the non-abuse of alcohol, because those who use a vegetarian diet are almost never thirsty, the water in their food supplying the organism's need for water, and because these foods do not excite thirst as do the condiments with which meats are often accompanied; and finally, vegetables are relatively cheap.

"On the other hand, according to the opposing authority (W. Casper), it appears to present three disadvantages: that of being non-stimulating, that of presenting too great a volume, being cumbrous for the digestive tube and that of not being rich enough in proteins. According to Gley, these disadvantages are perhaps more apparent than real. The lack of stimulating substances does not seem to him a great evil. Civilized persons are only too often tempted to abuse stimulants. Moreover, the volume of vegetable foodstuffs would be excessive only if one ate solely cabbages, potatoes and similar vegetables, but not if one uses a diet rich in cereals, in dried fruits, and especially nuts. In fact, the vegetarian diet is now used to a sufficiently wide extent to render it possible to collate scientifically made observations showing how far it is compatible with the integrity of all functions in a fully developed life. The experiments of Mesdamoiselles Joteyko and Kipiani, made on forty-three vegetarians of Brussels (students, professors, merchants, employees, artisans, society women and housekeepers), have shown that vegetarians can work two or three times longer than meat eaters before reaching exhaustion, and that the work of vegetarians is much more productive. The repair of fatigue is also more rapidly effected in vegetarians; a few minutes' rest suffice to enable them to recuperate their energies."

# The Foot and the Shoe

Dr. Elmer, in a paper read before the Philadelphia County Medical Society, told his hearers that the foot is a remarkably well-made structure, capable of an immense amount of work if properly treated. The inner side of the foot—the longitudinal arch—is the weak side; the outer border rests on the ground, and is the strong side. This creates the transverse arch. The metatarsal arch is supported by a pad of fat and connective tissue. The inner aspect of a normal foot is concave. In correct walking the feet should be held parallel to each other, and the weight should fall chiefly on the outer side. Under faulty weight bearing, the foot yields gradually to strain; there is the over-hanging inner ankle; the inner aspect of the foot becomes convex; the anterior portion of the foot becomes abducted on the posterior part.

"Pain in the foot is due to abnormal strain on ligaments, bone pressure where it does not belong, or pressure upon or injury of nerve filaments between bones. An outline tracing should be made of the patient's foot with the weight upon the foot. The shoe should have a straight inner margin, a medium rounded toe, a square heel about one inch high for a man, and one and one half inches high for a woman. The shoe should be as wide as the foot across the ball, and three quarters of an inch longer than the foot for the adult, one half inch longer for a child. The inner margin of the sole and heel, in cases of foot strain, should be raised three-sixteenths of an inch. In more advanced cases a steel shank is put into the shank of the shoe and a pad of firm piano felt fastened in the shoe to support the hollow of the foot. In cases of metatarsalgia, this pad is extended forward to support the metatarsal arch also, the support being just behind the heads of the second, third, and fourth metatarsal bones, a little higher behind the third. The ball of the great toe and the ball of the little toe should rest upon the sole of the shoe. Massage and flat foot exercises should also be used. Pain may be relieved by baking in the superheated air oven every other day."

# Sylvester Graham's Foresight

Sylvester Graham made so many and such remarkably apt suggestions in relation to dietetic reforms, one is compelled to believe that he was possessed of an extraordinary penetrating gift of insight and foresight.

Dr. Percy G. Stiles, Assistant Professor of Physiology in Harvard University, says in his little work, *"Adequate Diet:"*

"Reference has been made to Sylvester Graham. We shall do well to examine one of his chief doctrines which is enjoying something of a revival in our day. The flour which bears the name of Graham contains all parts of the wheat kernel, the husk as well as the interior. This reformer taught that by rejecting the husk we might fail to obtain some essential fraction of the food. This was a shrewd induction. It has been definitely proved that when the envelope or pericarp of rice is discarded, the grain ceases to be a complete food for pigeons. An active principle can be prepared from the pericarp which will perfectly remedy the deficiency when supplied in minute quantities.

"What goes wrong in the economy of the pigeon which is restricted to a diet of polished rice? The question can be answered with some precision. The compound which the ration fails to furnish is needed most urgently by the nerves. If it is not afforded by the food, a limited supply can be had from other tissues of the body, but at a heavy cost: the structures levied upon disintegrate. It is as though bolts were removed from one machine to repair another with the result that the first fell to pieces. When the nerves can no longer be sustained, even by this ruinous process, they become definitely diseased.

"The failure of nutrition in the pigeon is believed to correspond rather closely with the disease of man known in the East as beri-beri. People restricted by habitat and poverty to a monotonous diet are sometimes observed to lose rapidly in weight and strength, and then develop acute nervous lesions (polyneuritis). Beri-beri has always been banished from communities in which the food-supply has become more ample and inclusive."

# The Per Capita Cost of Insanity

We are making mental defectives by our reckless unbiologic habits of life so rapidly that if we continue at our present rate, in less than 250 years the whole population will be insane or idiotic. At the present time one per cent of the entire population is mentally defective.

The cost of maintaining the insane alone, according to the State Hospital Quarterly of Utica, New York, is $44,000,000.00 annually. The per capita cost of maintaining these useless members of society is $207.00 on the average for all the States. The highest cost is $307.00 in Maine, and the lowest $136.00 in Virginia.

# Department of Eugenics

# Defects Found in Drafted Men

GERTRUDE C. DAVENPORT

Under the above title C. B. Davenport (Major during the war) and Lt. Col. A. G. Love give the results of their study of the physical and mental defects found in two and one half million of the men drafted in the U. S. for military service preparatory to our entry into the great war. This number was chosen arbitrarily for the study, for two reasons: first because economy suggested a limit, and second, this number was thought to be large enough to include practically all the men of the first and second drafts. It does not include the Student Army Training Corps, made up for the most part of men too young for immediate military service. It also excludes the drafts from Alaska, Hawaii and Porto Rico. In includes, therefore, all the male population of the U. S. that was immediately available for military service which was not exempt on account of occupations directly useful for military or naval ends.

However, so gigantic a number as this was deemed large enough to include samples of all kinds of physical and mental defects that could possibly occur anywhere in our population. Moreover, so large a number as that chosen, would necessitate enough geographical distribution to pick up any defects due to local variations or to inbreeding. The advantage of such a study is obviously far reaching. Not only would it be of vast use to the medical profession but also of great service to sociological and economic interests as well. What the authors conceived as the possible usefulness of their study they express as follows in their introduction:

"The ideal population of any country is one in which all the inhabitants are physically sound, mentally competent and temperamentally controlled. Actually, the condition of any population comes far from meeting the ideal. Witness the army of doctors, the cities of hospitals, the thousands of court houses, jails and penitentiaries. Those persons who come to the notice of such physicians and such institutions are more or less sporadically or even accidentally brought to notice. Any survey of the physical, mental and temperamental health of a large section of the population taken without selection had until recently not been made. A complete survey of the defects in the American population which would give information would be of importance for many interests. Such knowledge would be important from the standpoint of social and industrial life, since it would give some insight into the suitability of the population for the various occupation which our social organization requires. It would have social-medical bearings, since it would indicate the physical and mental status of our population in different parts of the country, amid different sanitary conditions and with varying opportunities for medical and surgical treatment. It would have important military bearings since it would indicate the size and nature of the task before those who would seek to improve, by better conditions, the physical and mental standings of our population. Finally, it would have a biological significance in so far as it would reveal the inherent failures in man to make complete adaptation to the rapidly advancing requirements of a highly artificial civilization, the constitutional limitations of the various races to meet the conditions imposed by that civilization, and the influence of military selection on the breeding stock of the next generation.

When each man appeared before his local board for physical and medical examination, a card was assigned to his name, on which the findings of the physician of the local board were recorded. About 500,000 men were rejected by the local boards as unfit for military duty. Thus the men with the most obvious defects were, for the most part, at once excluded. This exclusion left about two million men to go before the physicians for re-examination at the mobilization camps. The forms on which the local boards had recorded their findings were sent on to the camps and upon them were now recorded the results of the examinations at the camps. This physical examination card was designated Form 1010. Thus each man, before he was inducted into actual military service had a careful medical examination, in many cases by as many as twelve physicians and oft-times some of these physicians were specialists of great repute. "In case a significant blemish was found, whether important enough to prevent acceptance or not, diagnosis of the defect was recorded upon the physical examination form". "The records thus made were sent to the office of the Surgeon General of the Army, copied on statistical cards, and counted and tabulated."

The data thus obtained from Form 1010 furnished the material upon which the study was based. The number of men examined to furnish the data for this study was estimated to be 2,743,922. It includes all the rejects of the local boards and two thirds of the men examined in the mobilization camps. The authors express their findings in rate per 1,000 men. Thus the rate means that one man for each thousand examined was found to possess the defect; in other words 2,754 men were discovered with the defect.

## Total Defects Found in Drafted Men

When all the defects recorded on Form 1010 were considered collectively it was found that 469 men in each 1,000 were involved. Therefore more than one half of the men possessed no defect or at least none worth recording. But these figures do not tell the whole story concerning the physical condition of these men, because only the major, the most striking, defect was recorded for the first million men. Later each and all the defects possessed by a recruit were put down on his Form 1010.

The commonest defects were of a mechancial sort, such as those that involved bones, joints, hands and feet. Thus it is shown that the American male in the U. S. is a mechanism with a 39 per cent faulty construction. That is to say, 218 in each one thousand men showed some mechanical defect, and the organ in this group most frequently involved was the foot. Indeed, one-half of all the mechanical defects found involved the foot. The number totaled 300,000. In every 1,000 men 50 had deformed or injured appendages and 40 hernia.

The second great category of failures in human construction is made up of defects of the sense organ. Twelve per cent of all defects found belong in this class. Refractive errors of the eye constitute half of this group and disease of the ear one-fourth.

Tuberculosis and venereal disease tied for third place. Each constituted 11 per cent, or 30 and 32 per cent respectively. Diseases of the heart and circulation, of defective development and of defective metabolism come in the 10% class. Underweight and low stature (below the standards required for military service in the army of the U. S.) curvature of the spine, goiter, defective chest measurements, cleft palate and hare lip are some of the important defects of development and metabolism. Nervous and mental defects, however greatly they handicap the individual, drop to 6%. There were 40,000 cases detected by the medical examiners, but many more cases were revealed after enlistment. Doubtless the extra excitement and anxieties and fear that camp life and battle bring, overbalanced many nervous organizations that were only strong enough to get on in ordinary everyday life. Diseases of the nose and throat amounted to 5%. Enlarged tonsils claimed 64,000 cases, this being the most important handicap in this group.

"It may well be a matter of surprise that not more defects were detected; probably this would have been the case, had the examinations been less expeditiously conducted. Many of the defects were obviously noteworthy only from a military standpoint. From the point of view of civil life, it is no defect that the South Italian is under 60 inches tall, though this constituted a defect from a military point of view. Also many of the defects noted, including most cases of venereal disease and many of the mechanical group, were not of a grade sufficient to render the man unfit for military service. A large proportion of the mechanical defects. important as they are in a man who is to be used as a part of a fighting machine, are not a serious handicap in civil life. Also many of the defects of the sense organs that were found are easily capable of correction so as to fit a man to perform his duties in civil life. Altogether, it is clear that fully ninety percent of the defects found are not of such a nature as to interfere seriously with the man's performing services of the highest order in civil life.

"From the standpoint of the Army, as stated, the defects are not equally important. Recognition of this fact led to the establishment of 5 categories by draft and military officials. There was first the so-called Class Vg, the class of men who, on account of physical defects, were rejected by local boards from any military service. These men were not sent to camp. The men received at camp were placed in one of the four "Groups", denominated respectively A, B, C, D. Group A includes men who were accepted for general military service. It comprised 2 groups, those in whom was found no defect. and those in whom was found only some minor defect, and which did not interfere with full military duty. Group B (which became operative only during the latter part of the draft period) included registrants with a defect which would permit of general military service after a cure had been effected by operation or otherwise. Group C included registrants with such defects as would permit them to function only in a special or limited military service in a special occupation or capacity usually clerical. Finally, group D, include men rejected on physical grounds from any military service.

"Nervous and mental defects, including feeblemindedness, mental deficiency, paralysis, psychasthenia, constitutional psychopathic states, and neurasthenia, were among the defects, victims of which were most commonly rejected. These are the defects that are incompatible with the strain of military training and active service. It doubtless would have been well had none of these been accepted for general military service. It is noteworthy that certain of these conditions, like psychasthenia, constitutional psychopathic states, neurasthenia and hysteria, which are difficult to detect, were passed over by local boards and were, therefore, an exceptionally common cause for rejection at mobilization camps. On the other hand, —relatively few men were rejected for enlarged inguinal rings (incipient rupture), for enlarged tonsils, for venereal diseases, and even for flat foot. For loss of fingers, hemorrhoids (piles) and hernia (rupture) about one half were rejected and one half were accepted for general military service. Among other defects which led to nearly complete rejection were otitis media (inflammation of the middle ear due to infection), valvular diseases of the heart, asthma, paralysis, and, above all, tuberculosis. All together, about 12 per cent of the men examined were rejected for any military service."

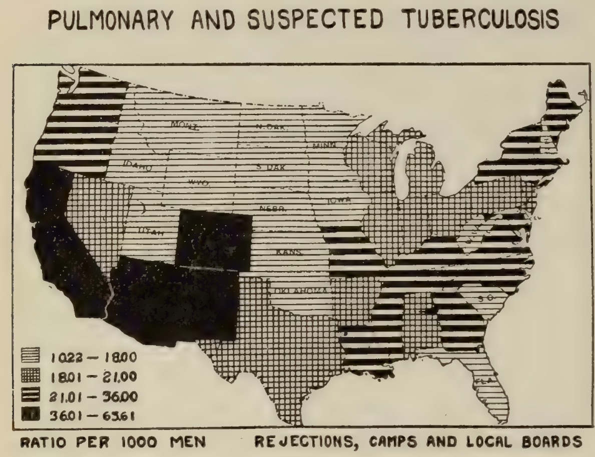

PULMONARY AND SUSPECTED TUBERCULOSIS

Fig. 2.

## Geographical Distribution of Defects

When the authors plotted out on the map of the United States the distribution of the various physical and mental defects, they soon demonstrated that certain defects or diseases appeared in especially large numbers in certain limited geographical areas; while others were practically absent there. On the other hand, there were defects that distributed themselves over the whole map. The authors were thus led to seek for the cause or causes that controlled sectional distribution, and in many cases they were able to explain the reason why one area showed such great liability to certain diseases while others were almost free from them. The authors studied this distribution in the United States from the standpoint of the disease or defect. In this article, however, we shall consider it from the standpoint of causes.

*Segregation.* The first cause for local incidence of a disease above the normal for the whole country, that we shall consider we will call *segregation*. When the distribution of tuberculosis, for example, was plotted on the map, it was found that the States of Arizona, New Mexico, Colorado and California were black with it, as the accompanying map will show (Fig 2). The States of Oregon and Washington on the Pacific Coast, the New England States and New York on the Atlantic Coast, and a certain group of Southern States showed considerable incidence also. Now the States that are bearing the heaviest burden of tuberculosis are those with climates so notoriously warm and dry that they are the Mecca for the tubercular from all over the country. When once healed or helped in such a climate, the patient, usually, is compelled to remain there throughout the rest of life, and hence more children are born there with a constitution susceptible to tuberculosis than in other parts of the country. Moreover, tuberculosis is an infectious disease so that in these health resorts the remainder of the population is more frequently exposed to the disease than is the healthy population in regions with less incidence of the disease. The rigor of the climate of New England early took a heavy toll of tuberculosis from its Puritan stock. Natural selection would, no doubt, in time have produced a hardier race in respect to this susceptibility, were it not for immigration into the area of so many peoples from warm climates such as Italy, Greece, Portugal or even from agricultural regions further north in Europe, where the people were accustomed to a more outdoor life than they found in the crowded cities and factories of New England and New York. The high rate of tuberculosis in Virginia and the Carolinas is partly due to the many sanatoria for the tubercular in the mountainous regious of those States and partly to the negro population with a high rate of tuberculosis. The negro race is adjusted, by centuries of living in tropical climates, to a warm climate. Hence they are ill adjusted to the climate of the greater part of the United States. Moreover, they are not adjusted to living in closed houses; hence they show a very high incidence of tuberculosis in this country. We have therefore segregated in the South a race susceptible to this disease, and the two causes combined, namely, segregation and susceptibility, give to this area its heavy quota of tuberculosis.

*Contagion.* While, in the case of tuberculosis, constitutional diathesis probably plays the more important rôle, nevertheless, the disease is one that is communicated to others, especially to the underfed or overworked or to those who for any other cause are in a condition of lowered vitality. In the case of venereal diseases, however, contagion plays a sure game. The strong as well as the weak, physically speaking, probably acquire the disease whenever exposed to it. These diseases are of such wide distribution and of such social interest that the findings of the military survey are gratefully received, because the picture, black as it is (see Fig. 3) for some races and regions, is not as black for the whole country as "conservative estimate" has often painted it. "These diseases have a social interest which far exceeds the military one. Their numbers give a rough index to the success that the different States have met with in their efforts to inculcate the sex mores and the capacity that the population of the different sections have in inhibiting the sex instincts. The details of distribution in different parts of the country shown in Fig. 3 will repay careful study. This group includes syphilis, chancroid and gonococcus infections, which together give a rate of 32. This rate or at most the rate of 56 per mille obtained from the second 1,000,000 men alone, must be taken as the most precise information we have concerning the proportion of men in the United States of the ages of eighteen to thirty, who show symptoms of venereal disease at a given time. There is no adequate statistical justification for the statement made by propagandists that 10 per cent, or more, of the men in the United States are affected with venereal disease. No 'conservative estimate' can replace, or add anything to, the results of the exhaustive individual examination of over 2,500,000 (probably 2,754,000) men which have led to the figures just quoted. It is to be remembered, moreover, that this rate of 3, or at the most 5.6 per cent, includes the colored population as well as white, and there is good statistical evidence that colored men are several times as apt to be infected as white men. As the figure shows, just those States with the largest proportion of colored population have the highest ratio of venereal diseases. Adjacent regions with an

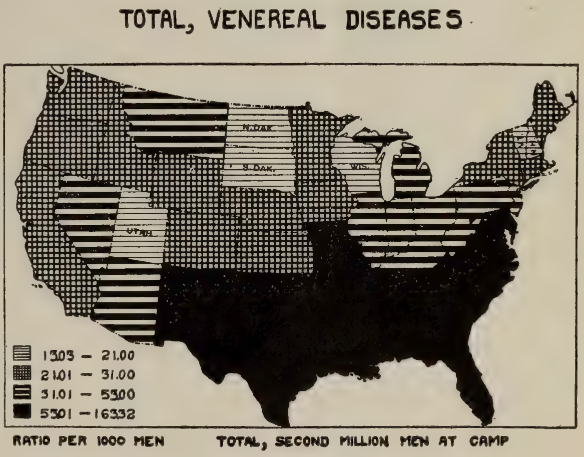


Fig. 3.

intermediate proportion of colored population showed an intermediate amount."

Trachoma is another disease spread by contact. It is commonly known as granulated lids, and when untreated medically, leads to blindness. This disease spreads most rapidly where knowledge of personal cleanliness and of hygiene are most lacking. The poor whites and the colored population of the South are fruitful fields for the propagation of this disease. The disease at times has scourged the North American Indian. To our ports of entry, despite more or less careful inspection, come many persons with this disease, especially in its earlier stages. The disease is difficult to detect in its beginning and hence cases often escape observation. Therefore each infected immigrant becomes a focus of infection wherever he takes up his abode.

*Parasitism* plays a greater rôle in the health of the population of the United States than we were wont, a few years ago, to believe. Malaria was a serious handicap to the North American pioneer, but when the land was cleared, drained and tilled, it became healthier to inhabit. This fact was clearly recognized long before the relation between the Anophales mosquito and malaria were known. For generations we were wont to describe the lack of energy displayed by peoples in certain regions, especially in the South, to malaria. Within the last few years, however, we have learned that the South is laboring under a double handicap of parasitism.

The hookworm, which was introduced into this country from Africa with the slaves, is widely distributed throughout the warmer areas of this country, especially where sanitary disposal of sewerage is not practiced. Hookworms live in great numbers in the human intestinal canal, thus sapping the vitality of their hosts at its very source. They respond readily to proper medical treatment, and where proper disposal of refuse is provided, reinfection can be avoided.

*Imperfect Adaptation.* There are a number of ailments and defects that man inherits which are due to the fact that he is not yet perfectly adjusted to an upright position. From the standpoint of military efficiency, as well as ability to stand the severe strain of modern civilization, hernia is the most important in this group. There were 100,000 individuals with this defect among the men of draft age. The history of the origin of this defect would lead us to expect that it would be rather uniformly distributed in the whole population when the occupations are not of the most laborious sort. The heaviest incidence of it occurs in mining and logging regions. It is fairly uniformly distributed in all other parts of the country.

This leads us to consider the *occupational defects.* Serious defects were found in the arms in 15,000 cases. This number included deformed, atrohied or lost arms. The loss of an arm is, from a military point of view, a prohibitive defect. Even in civil life a man so maimed is barred from most operations of manufacture or commerce. When the loss of arms from accident was plotted on the map, the excess fell into several geographical groups. One occurred in the Allegheny Mountains from Pennsylvania to Georgia, one in the Gulf region from Mississippi westward and one in the State of Washington. These are the regions of extensive lumbering combined with saw-mills, planing-mills and box factories, which furnish extra hazardous occupations. The rate for loss of fingers reached its maximum in the State of Washington. It was high in Maine, Michigan and Wisconsin; all of them lumbering regions. Treeless plains and strictly agricultural regions sent few recruits so maimed. These lumbering regions also sent many faulty unions of fracture, as did the regions of cotton mills in the South, where the incidence of complete loss of arms was also considerable. Proper setting of bones and after surgical care are usually not of the first quality in forested parts of the country.

The loss of legs is much commoner than of arms. The States of Washington and Utah showed the greatest incidence of this misfortune. The State of Washington is a great lumbering section, while in the case of Utah, it was found that the great railroad shops of Ogden were largely responsible for the high rate in that State. The incidence is rather high in mining regions. Taking the country over, the loss of legs was much commoner in rural than in urban regions.

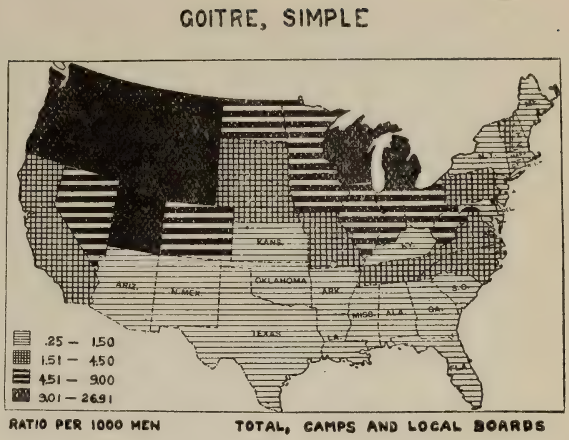


FIG. 4.

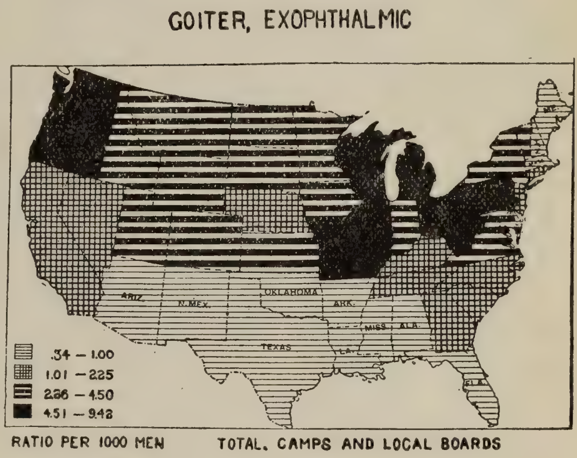


FIG. 4*a*.

*Goiter.* There are a number of diseases that show conspicuous geographical segregation the causes for which are still unknown. Goiter is one of this group. Although there are goiterous people in all States and all occupations, the region most densely populated by this defect is the Pacific Northwest and the region of the Great Lakes. "Goiter is a disease characterized by an enlargement or a misfunctioning of the thyroid gland, which occupies the lower neck region. Two types of goiter are distinguished: simple goiter, characterized primarily by enlargement of the gland, and exophthalmic goiter, characterized less by enlargement of the gland, than by a nervous, irritable condition, by a rapid heart, and by distention of the eyeballs. It was formerly regarded as a rather rare disease in America." "One of the surprises of the draft examination is that many young men (the sex is relatively the less affected by goiter) should be so affected. There were found over 20,000 cases, giving a rate of about three men per 1,000. Not less surprising is the geographical distribution of simple and exophthalmic goiter. It seems that goiter is a disease pre-eminently of the Great Lakes basin and of the extreme Northwest. (Fig. 4, 4a.) This clear-cut distribution of goiter should help in the solution of its etiology. The area of its greatest incidence in the Great Lakes region nearly coincides with that of the hard waters of the Niagara limestone. But in Oregon and Washington, where the incidence reaches its maximum, the waters are soft. However, the water of the cities of the Northwest comes largely from the mountains of the Cascade Range and the Rockies, and the mountainous regions are those of the highest incidence of goiter in the European countries. On the other hand, the Great Lakes region is without important mountains." Not all persons who live in goiterous regions are affected with goiter, and it is possible that there is a selection based on race of those who show the symptoms. There is an excess of goiter among the Scandinavians, and the rate is higher still in those sections with a large proportion of Finns, but it must be recognized that the sections inhabited by Finns are both in northern Michigan, a center of goiter."

*Urban and Rural Defects.* When the recruits from the cities and the country were compared, it was found that the rural recruits were the more fit, the more free from physical defects. The rate was 528 per 1,000 for the country and 609 per 1,000 for the cities. Flat feet alone added 15 per cent to the cities quota. "There is also in the cities an excess of underweight, inflammation of the middle ear, errors of refraction, goiter, pulmonary tuberculosis, defective teeth, and syphilis. These defects, in which the city rates surpass the rural rates, are, however, partly counterbalanced by the greater amount in rural districts of mental deficiency, deformed and defective extremities, blindness in one eye, arthritis and ankylosis and gonococcus infection. Thus, while the urban districts exceed in defects due to inferior stock and bad environmental conditions, the rural districts exceed in hereditary congenital defects—and to accidental injuries." The excess of congenital defects in rural regions is explained on the ground of the more frequent consanguineous marriages there. The rural excess of gonorrhea is due largely to the rural negro populations.

*Distribution of Defects by States.* When all the defects were massed together on one map, it was found that "there are two great centers of defect—one is in the northeastern part of the United States, and the other in the western half, including especially the States of the Pacific coast and the two mountain States of Wyoming and Colorado. Of all the States, Rhode Island leads with a defect rate of 802. This high defect rate, like that of the other New England States, is largely controlled by flat feet and hernia. In the case of Rhode Island, however, many minor defects find here the maximum or nearly the maximum ratio. Conditions in which Rhode Island stands first or second are: Alcoholism, obesity, neurosis, total for myopia and defective vision (cause not stated), hemorrhoids, bronchitis, deformities of appendages and trunk, atrophy of muscles of the extremities, underheight and underweight. The reason why Rhode Island stands at or near the top in many defects is largely because of the defective or the non-resistent stock which has been drawn to this, the most urban of all States—that in which the population is most generally engaged in manufacturing."

Vermont stands next to Rhode Island both in respect to the number of defects and the relative frequency in which they appear in the population. French-Canadian stock shows high incidence to many defects. Hence the large migrations of these peoples into Vermont, New Hampshire and Maine have contributed largely and ofttimes disadvantageously to the physical condition of the population of these three States. Virginia stands among the first six States in respect to twenty kinds of defects, which include mainly defects of the head, throat, heart and feet. "Many of these defects are congenital, such as arise in a highly inbred population. Others seem to be due to bad conditions of living, such as are associated with mental defect."

At the bottom of the list stands Kansas, with a rate of 442 per 1,000. This is about half the defect rate for Rhode Island. Kansas is part of a strip of territory which shows considerable physical superiority in its population. This territory extends from South Dakota to Texas. These are agricultural States, without great mining or manufacturing populations. Moreover, they have received only a small amount of immigration from Southeastern Europe. Kansas was settled by the best New England stock, by people who went westward to uphold an ideal, namely, freedom.

# Department of Physical Education

**Conducted by C. WARD CRAMPTON, M. D.**

Dean of the NORMAL SCHOOL OF PHYSICAL EDUCATION, Battle Creek, Mich.

# May Festivals

The dwellers in the Northern Temperate Zone have always ruled the world, and it is quite likely that they will continue to do so; for the Temperate Zone gives the series of conditions and circumstances which make for vigorous resistance, the development of surplus power and the opportunities to put it to use. It is not likely that there ever will be a world power with its capital at the equator; for a people which lack the hardness of winter to weed out the unfit and to develop a sturdy fighting power against hard conditions will never be able to summon power and energy to make headway.

The winter cradles men. The cold stimulates the development of power as pressure that bends a steel spring. If winter be too long and hard, as in the Arctic regions, the spring is never released from its energy, and there are no results produced.

In the Temperate Zone, when the long, hard winters break into sun-dappled hours of showers and sunshine, when the hidden green loveliness breaks from the brown and gray of branch and tree trunk, when from the wrinkled, bare, brown bosom of the earth spring the tenderest, variegated flower beauties, then the spirit of mankind, released from the pressure of the hard fist of winter, rejoices and leaps in the sunshine.

From the dawn of history, May has been a time of rejoicing, when the Greeks and the Norsemen alike celebrated the poetry and mystery of the new, living earth. Upon the first day of May there were festivals, when with little or no premeditation, there was an out-pouring from the houses upon the village green and further afield into the woods for the "gathering of nuts of May," for the "bringing in of the May pole" and for the dancing about it, with a brave show of garlands and ribbons.

The festivals in old England were often elaborate and sometimes very high spirited. There was always a Queen of the May, who held joyous court and directed the ceremonies, which frequently became revels. Says Hawthorne, "In their train were minstrels, not unknown in London streets; wandering players, whose theatres had been the hall of noblemen; mummers, rope-dancers and mountebanks, who would long be missed at wakes, church ales, and fairs; in a word, mirth-makers of every sort such as abounded in the age." Frequently Robin Hood and his Merry Men were personified, and Maid Marian became the Queen of the May.

The Morris Dancers, lineal descendants of the Dances of the Moors, brought into England in the reign of Edward the Third by John of Gaunt, when he returned from

The May Pole Dance

Spain, joined in the celebration; a Hobby Horse or two galloped gaily about, upsetting and pranking the more stolid folk; and a dragon or two sometimes ridden by St. George himself appeared to grace the occasion.

Often the revels exceeded all bounds, continuing far into the night, to the general scandal and dismay of the more sober minded. The Puritans had many a hard word to say of the May day and when they came to America hoped to leave it all behind. But in 1627, on the first of May, the first American May pole, a pine tree eighty feet tall, was raised by Thomas Morton, a soldier of fortune, and his men, on the summit of Mount Wollaston. They called it the Merry Mount; and indeed they did the occasion proud, as Hawthorne has graphically described in his "Tale of the May Pole of Merry Mount."

All these days are by and gone. Thomas Morton and his followers lie in scattered and unknown graves, but the spirit of spring perennially bursts through the winter-hardened soul crusts of humanity, and will not be denied. The business man stands looking out of his office window, and sighing, returns to his work. The housewife, her cleaning complete, looks upon the fair

Winding the Pole

"Rejoice, the plaited pole is wound."

green and with a sigh returns to the house. The children, according to their age, burst out upon the land. Sometimes, even now, there are May days and picnics of a kind.

The spirit of Spring may rise and fall again into sober gloom without expression or it may find outlets which destroy the very loveliness it expresses. To give men, women, young men, maidens and children opportunities and power for the happy expression of the spirit that is within them is one of the tasks of instructors in physical education. To know the various forms of games and play not only for the gymnasium and schoolroom but for the church social, the evening party and other community affairs, is the pleasant duty of the teacher of physical education, who is coming to be more of a community leader than a gymnast. One of her happiest tasks is to create folk festivals in which the hard-headed business men, the hard-worked society leaders, the youngsters of academy and college, become again plain folks and rejoice in salutary and lovely human ways. The development of the pageant expressing some community event or some affair in history of significance and moment, the making of a May festival, are things of sober in-

Sellenger's Round—An English Country Dance

"Our arms are plighted—"

struction and of delightful accomplishment.

The illustrations show a festival which has been given yearly by the Battle Creek Normal School of Physical Education. The May poles are brought on, the streamers are gathered, and in the intricacies of the dance, the ribbons are plaited upon the poles. Other dances are given. The one shown in the illustration is the Flamborough Sword Dance of old England, originally a ceremonial of knightly pledging of fealty and indissoluble comradeship in arms, ritualized and preserved in the sweet distillation of music and dance. A historical pageant is presented—the story of Pandora, the first woman, a gift of the gods, who losed upon earth the troubles which became a heritage to all flesh, and then happily released from the same chest, the spirit of Hope.

Other pageants and May festivals are planned by the students, and the plans are tucked away in carefully cherished note-books. The simple folk dances and games that are practiced during the winter in the gymnasiums and playgrounds of the school may be brought out in the spring and used to make an occasion. The various forms of manly exercise and athletics practiced by the boys are also ap-

The May Queen

propriated to the purpose, and delight the hearts of the parents. Many of the old English customs — the Hobby Horse, the Dragon, Robin Hood and His Merry Men, and the like—may be added, and the Morris Dancers may carry their scarfs and bells into the affair.

By all means there should be in every community a spring festival and pageant. There is a spiritual appetite for this which if not satisfied beats back and down upon the soul, both of the man and of the community. Let the children and the young folks come out upon a green place in the sunshine, there to disport themselves in the various May-time ways for hundreds and thousands of the older folks to look upon; then there is a general rejoicing and a going back to homes with the feeling that life is more complete, vital and happy than before.

A Choric Interlude

These are the goods sold to mankind by the teachers of physical training—an earnest of their success in their triad of duties, Health, Happiness and Efficiency.

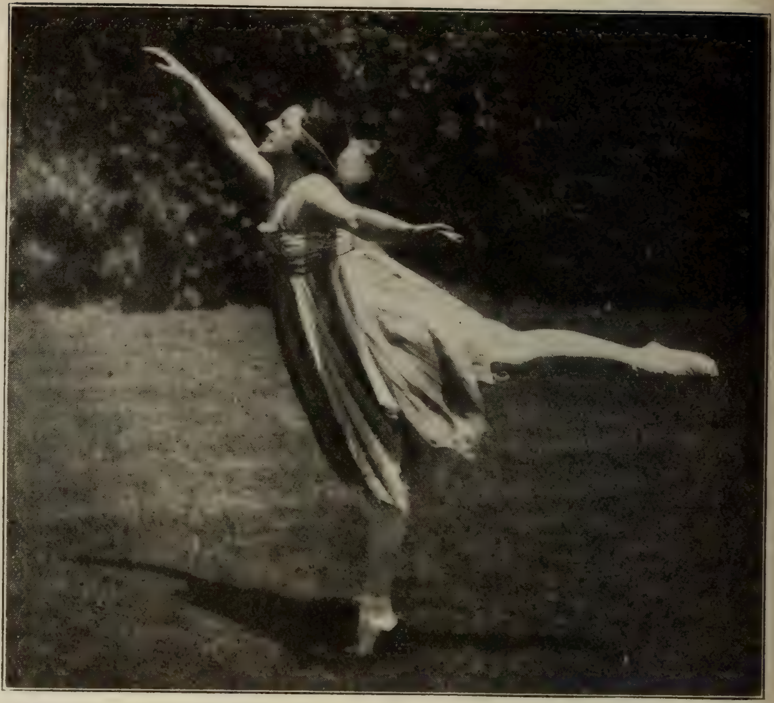
# Good Posture from Natural Exercise

The Physical Training world has been split into two opposing camps because of the differences of opinion on important professional questions. The earliest controversy in America waged between the German and the Swedish Systems. The greatest general difference of opinion now lies between those who believe that informal physical education in the guise of play, dances, and athletics is sufficient for all educational and hygienic purposes on the one hand, and on the other those who, though still believing in all of these recreational forms of physical education, yet hold that the formal exercises and scientific gymnastics are of real value. Good Health stands with those who believe in the value of both forms of Physical Education and has already given its readers a carefully selected series of scientific exercises on good posture. It believes thoroughly in recreation and games, but it does not hold that natural exercises are adequate for all Physical Training purposes.

Man has improved upon Nature and will continue to do so. Plays and games, athletics and dancing, strengthen the human frame and increase vitality. Too great indulgence in games, however, tends to develop the flexor muscles, which bind down the shoulders, pull forward the spine and are likely even to pull down the head. Nevertheless, improvement in vitality counterbalances these defects to a very great degree, and it is only where the players and athletes are overworked in their training and become "stale" that bad posture really results.

One of the best forms of natural exercise that has come into general practice in the last several years is the adoption of old folk rhythms in the form of folk dances. These have been collected from many lands, carefully sorted and tested, and are now used by hundreds of thousands of children and adults in America. It is important to know what folk dances are good and what are bad, and the basis of selection will be taken up in a future article in GOOD HEALTH.

One of the most important criteria is the effect upon posture, for some dances are good for posture and some are not. The key to the selection is in the use of the extensor muscles, those which when contracted straighten the dorsal and cervical spine, lift the head and chest, and keep the trunk erect. GOOD HEALTH shows this photograph of one of the teachers who was graduated from the Normal School of Physical Education in 1919, and who is now at the head of the Physical Training Department of the Public schools in an Eastern city. It is a pose taken in the course of a dance which was part of a classic pageant, "Pandora," given at Battle Creek. An analysis of this pose reveals the vigorous contraction of the extensor muscles from head to heel. The posterior cervical group is contracted and shortened. The muscles of the back of the right shoulder are strongly contracted above and the left shoulder below. The whole dorsal spine is straightened and even re-curved. The upper chest is lifted high and the thorax opened wide laterally. This increases the capacity of the upper trunk and strongly improves the circulation by increasing the thoracic aspiration. The extensor muscles of the lower back, hip, and thigh are vigorously drawn into contraction, while those of the left lower leg are almost at rest, but the right calf muscles are active.


A Pose from "Pandora"

This anatomical dissection of this movement gives a clear picture of the benefit which may be derived from it and will indicate that some natural exercises can be of great use in securing good posture.

# Home Economics in Vocational Training

LENNA COOPER

The trend of modern education is more and more toward the practical, as was evidenced by a large gathering of leaders in vocational education which met in Chicago a few weeks ago, when a thousand or more educators met to further the interests of this branch of education. A dozen years ago vocational education was in its infancy and destined to fight its way to growth and maturity through the maze of prejudice against the mixing of education long since considered as only cultural, with anything so common as training for a livelihood! This child of adversity has certainly had a phenomenal growth. Science, economics and even art have invaded the realm of vocational education, thus providing means for mental and even moral development as well as adding pleasure to the following of one's calling.

A few years ago Congress was led to realize the importance of this branch of education, and as a result, an appropriation under the Smith-Hughes law, was made, totaling $6,000,000, which was to be alloted to the States furnishing a like amount. This appropriation was made to promote agriculture, trades, industries and home economics.

The latest appropriation for vocational education is to the army, the sum of $2,000,000 having been granted for this purpose. With this appropriation, an entirely new feature has been added to army life, which is undoubtedly destined to change the character of the personnel of the army as well as the efficiency of it as a fighting unit, should another emergency arise. The plan is to accept short enlistments of three years, and during this time to give an intensive training which will make of the man a better soldier and a better civilian; for as one army officer has said, "We will do so much for a man in his three years of army life that he cannot afford to re-enlist."

After our entrance into the world war, it was found that 48% of the men required for service were needed as technicians, for modern warfare requires all the skill that engineers, electricians, mechanics, carpenters and even painters can put into it. Our army set about to train these men. Marvelous results were obtained in what seemed to us an incredibly short period of time. Meanwhile our Allies, long since reduced almost to exhaustion, held on while we were training and being transported. This state of affairs we hope never to see again. Our army henceforth will consist of thoroughly trained technicians, each man being allowed to choose his vocation. For twenty-four weeks during the winter he will spend thirty hours per week in school. Three hours of this time will be spent in shop work, along the line of his chosen vocation, one hour will be spent in the mathematics of his vocation, while two hours will be general or basic education.

The general or basic education consists of one hour of English and one hour on Americanization, i. e., a study of our own and various other countries, with a comparison of the institutions and ideals of each.

This new rôle of the army will no doubt have a very beneficial effect upon industry, and it is hoped also upon the morals of our citizenship.

## Moral Value of Vocational Training

Is it not probable that a vocational training for women for that highest of callings, home-making, would have an equal, if not greater, effect upon the moral of our citizenship? Since 95 out of every hundred of our population live in homes, could anything influence our citizenship more than the training of our women for home-making?

The training for home-making as a vocation must not be confused with the work of cooking and serving—commonly known as domestic science and domestic art. These are important, and should have a place in the curriculum of every high school and if possible even in the 7th and 8th grades. These subjects, if properly taught, have great influence in helping girls to see the home in an ideal light, in putting joy into what would otherwise be an irksome task and in giving her an appreciation of the relation of the housewife as a producer as well as a consumer in the home. Such courses must be made attractive, with something of the play spirit entering into the work. Doctor David Snedden has said: "The spirit of the school of liberal education is largely that of high-grade play; the spirit of the vocational school must be that of serious work. Only one worker in ten thousand can afford to pick daisies as he travels the road of work. The spirit of liberal education is that of the traveler for recreation and enlightenment; the spirit of the vocational school is that of the man who has business at a given destination, which destination he must reach at the earliest possible moment. The spirit of the school of liberal education is diffusive, catholic, rich in various human contacts; the spirit of the vocational school is one of concentration of effort, singleness of purpose, and contacts limited to those essential in the economic process, that moving toward fulfilment. 'Work while you work,' is the motto of the vocational school; 'play while you play,' of the liberal school."

There are 16,000,000 women now following the vocation of home-making, and 90% or more of them are doing their own work. Of the remainder of the 45,000,000 women and girls in the United States the majority will sometime be following the same vocation. It is safe to say that the large majority of housewives have come to their homes with only such information and skill as they have been able to "pick up"—a case of "gathering daisies on the way to work." The demands of modern life leave little time for a girl to "pick up" much information.

The vocation of home-making is a very composite one, in spite of the fact that many of the productive processes, such as spinning, weaving and tailoring, have been taken from it and others are no doubt destined in time to go. The very nature of the home demands a multiplicity of operations. In it, adults must find rest, recreation and sociability as well as shelter, clothing and food. In addition to these common necessities, the children must also have mental and moral development. The tasks, then, common to all homes are:

1. Selection, preparation and serving of food.

2. Selection, repair, and laundering, of clothing.

3. Care of house—bedmaking, sweeping, scrubbing, cleaning in general.

4. Care of children in health and in illness.

In addition to the above essential duties are many more needed to make the home "run smoothly." Entertainment for both

Joint Banquet
NATIONAL SOCIETY for VOCATIONAL EDUCATION
and the
VOCATIONAL EDUCATION ASS'N of the MIDDLE WEST
Grand Ball Room
Hotel La Salle
February 19, 1920.

Joint Banquet of the National Society for Vocational Education and the Vocational Education Ass'n of the Middle West.

adults and children, selection and purchase of furniture and other household objects, household accounting, all come in for the attention of the busy housewife; and a very versatile worker is she, if she does them all well.

During at least the first year of her married life, the young housewife has time to become familiar with the mechanical operations of the home. During this time she is in a very receptive mood, anxious to learn the best methods of performing her household tasks. Should there not be available courses of instruction especially designed to help her solve her problems, with her home as her workshop? There are many girls in industry ,who on becoming engaged to be married, would be more than glad for evening classes or continuation classes.

### Needed Legislation

Since only half of the children go to school after fourteen years of age, it is obvious that provision should be made for their vocational training after leaving the day school.

Congressman Fess, chairman of the House Committee on Education, has recently presented a bill before Congress, known as House Bill No. 12078, proposing that Home Economics shall be placed on the same financial basis as the vocations for men.

At present the Smith-Hughes law stipulates that not more than 20% of the $3,000,000 given to "trades, industries and home economics shall be spent for home economics." There is, in addition, $3,000,000 given to the teaching of agriculture, making practically six million available for the vocational training of men under the Smith-Hughes law (eight million with the new army appropriation of two million). At present no more than six hundred thousand is available for vocational training for women. The new bill would grant $500,000 for the fiscal year June 30, 1920, "and annually thereafter for nine years, an amount for each year equal to the amount appropriated for the year preceding, increased by $250,000, and for the fiscal year ending June 30, 1931, and annually thereafter, the sum of $3,000,000."

The Smith-Hughes Law makes no provision for supervision of home-economics training, hence the work has necessarily lacked definite standards. The new bill not only provides for supervision, but allows for studies, reports and experimentation as well.

If you are interested in the welfare of women and the home in this generation, but more particularly of the next, will you not use your influence in securing the passage of this bill? Interviews, letters, telegrams and petitions to your congressmen and senators may do much to secure its passage. In writing, be sure to give the number of the bill.

# Labor Saving Devices In the Home

EDNA NEIGHBORS

If the average business man should attempt to outline for any housewife a perfect system for the reduction of her acknowledged drudgery, the system proposed would likely appear thoroughly practical, yet with only a few days' try-out in a real home, the efficacy of a more or less minute regulation of the operation of a home might well be doubted; for all good house-keepers and home-makers understand that there is a limit to the introduction of a system into a home. This is true in particular of the home where there are children. However, a general plan for the execution of the household activities must be made and followed. "A place for everything and everything in its place" is a most advisable household rule; a time for the performance of certain duties, and those duties performed at that time, is equally advisable. Such regulations, when wisely made, can be in themselves the greatest of labor-saving devices; yet the effort for too much system in the home—the attempt at making its entire routine factory-like—is actually destructive to what a home ought to be,—a place of freedom, where a person may escape the thoroughly business-like atmosphere of his many hours spent outside the home.

To bring the average American home down to the community kitchen standard—even though that standard may be economical in the matter of time, labor and expense—is wholly undesirable save in exceptional instances. What those who are responsible for the care of a home need is a knowledge and use of practical labor-saving devices adaptable to nearly every home, whether that home be in the country or city. These devices meet the exigencies arising in many homes. They save time and strength to meet the unforseen situations. They also reduce materially in the "long-run" the expense of housekeeping.

Housewives of today are demanding labor-saving devices as never before. The servant problem is in many cases responsible for this demand. The ordinary, more or less unskilled servant of a few years ago, who could be afforded by the great middle class is fast becoming a rarity. In her place, if there is a servant at all, is the girl who comes to the home for a few hours each day, or perhaps, as in many cases, only for one day out of the week, and accomplishes skillfully with modern household equipment what the maid of a few years ago took a much longer time to do, with a greater expenditure of energy. This uncertainty of help has created a tremendous demand for many modern devices saving time, labor, and expense. These same devices which the servant problem was most instrumental in producing now bar the servant from many homes, as numerous hitherto laborious features of housekeeping have been so lightened by the use of modern equipment that the need of a servant is no longer imperative.

The modern home is now run very largely by electricity. In every instance where electricity is available—and it is now a very simple matter to install a private electrical plant in country homes far removed from the town or city—have it do the work it can so effectively do. There seem to be few services it cannot render outside of thinking for itself. The farmer or ranchman adds a wonderful benefit to himself as well as to his wife when he makes possible the use of a motor, whether driven by gas, electricity, or gasoline. "Harness the motor" and allow it to pump the water, chop the feed for the cows and the chickens, run the sewing-machine, wash, dry and iron the clothes, churn, mix foods, wash dishes, cook, clean rugs, freeze the ice-cream, and so on.

The tendency of the times is toward simplicity in the furnishing of the home. This in itself is a labor-saving device, for much unnecessary labor is dispensed with in discarding excessive bric-a-brac and applied decorations which only make the article more difficult to care for. For example, substitute porcelain knobs without the metal trimmings, requiring frequent hard polishing, and plain doors where dust does not so easily accumulate for paneled ones. In the bathroom with the wash-bowl built into the wall the trouble of caring for the metal fixtures is saved to the housewife.

The market offers more actual labor-saving appliances for the kitchen and laundry than for any other departments of the home. This is the case because the demand has been greater for labor and time-saving devices for those departments where the work does seem often to be mere drudgery, requiring a great deal of strength and time in the necessary doing of tasks which in a very few hours are only to be done again. However, the one device which has proven the most popular to the housekeeper has its chief use outside either the kitchen or the laundry. The electric carpet sweeper and vacuum cleaner combined is becoming an indispensable fixture in more and more homes. The soft hair brush sweeps the rugs and carpets thoroughly, loosening the dirt and dust, which the suction removes. In this way any germs present are killed. Thus it is that not only the fine appearance of the rug is preserved but also the life of it materially lengthened, since nothing is more destructive to the fibre than ground-in dirt and dust. A good broom might do the work equally as well, with the expenditure of a vast loss of energy and time, but why not save this time and strength for the doing of something more profitable than the mere cleaning of a rug. An electric cleaner and sweeper is seemingly expensive to one of limited means, yet in the end it is cheap. In case a girl comes in to help for a few hours each week, she can quickly and thoroughly clean all the rugs of a large house. To go through the old-fashioned sweeping requires longer hours—hence more pay for services—and then the work is not so well done.

A rather inexpensive gas or electric heater for water in the bathroom is a great convenience.

While there are various other labor-saving devices for parts of the home outside the kitchen and laundry, it is to appliances for the latter that the attention is most easily directed. The kitchen in the electrically equipped home can be made a marvel of sanitation and daintiness. A gas or an electric range, and even a coal or wood stove, an electric dish-washer, with a few other electrical fixtures, as a small grill and toaster, which are very useful in the preparation of breakfast or luncheon, set in a kitchen with dainty, quickly washed curtains at the windows, floors preferably of composition easily cleaned, and walls of tiling or finished with easily washed paint is certainly not a place in which to find real drudgery.

The recent production of the electric range gives the housewife a truly ideal cooking apparatus. It has the advantage of being run by electricity, which makes for better cooked and more wholesome food, less danger of scorching and burning, since it has automatically controlled heat. With this range there is no need of the fireless cooker.

Besides the cooking utensils, there are such articles as food choppers, mixers for bread and cakes, the mashing of potatoes, etc., the egg beater, and even silver cleaner, all run by electricity.

The electric dish-washer, too, relieves the housewife of a dreaded aftermath of each meal. With this appliance there is no putting the hands in hot, greasy dishwater. There is also no necessity for drying the dishes. Arrange them for draining, dry silver, polish the glasses, and leave the dishes to drain. So dried there will be no streaks. Scrub the pots and pans with stout fiber brushes.

If the tops of the tables are of hard enameled iron, they are more sanitary and more quickly cleaned. In case they are of wood, they may be covered with zinc, or white oil cloth covers may be attractively used. Above the table there may conveniently be a rack for small pans, while underneath on a lower shelf are the heavy pots and pans.

No kitchen is complete nowadays without a good, commodious kitchen-cabinet, which in addition to being a place of storage for some of the most commonly used foods, also holds some of the smaller cooking utensils. Thus the utensils for measuring and the article to be measured are in close proximity, making no extra steps necessary.

A few other very useful articles added to those above suggested and the kitchen no longer is the most unpleasant room of the house. A dicer for vegetables and fruits, of course a refrigerator, the scuttle on a stand with casters in case a coal stove is used—in this way eliminating the back-breaking work of lifting the scuttle—are economical of time, labor, and expense.

The pressure-cooker, which bids fair to eventually rival the vacuum cleaner in popularity, can be used in preparing almost an entire meal at the same time and in a minimum time. It is also very handy in the successful canning of both large and small quantities of fruits and vegetables by the cold-pack method.

A large opening in the sink in the end opposite the drain, underneath which may be placed a receptacle for the peelings of fruits and vegetables, in fact, the refuse from all kinds of foods in the preparation for use, eliminates a second handling of such garbage and the unnecessary use of an extra basket or pan.

A last word may well be said here in regard to the saving of labor in the arrangement of the kitchen furnishings. The housewife should study this feature of her kitchen and so adjust the various pieces as to save useless walking.

There is everything to be said for the electrically equipped family laundry. In a very short time, the family laundry can be beautifully done in the washing-machine. After the washing, comes the drying. The newest dryers keep a constant stream of dry, warm air circulating to prevent yellowing. The plain pieces of the wash, as sheets, pillow-cases, scarfs, tablecloths, aprons and rompers are finished in mangles. The ruffled blouses and more fancy pieces require the hand electric iron.

The fitting of a home with the various labor-saving devices may seem extravagant in the beginning, since many of them are high-priced, but in the end they are really economical. If good, substantial articles are purchased and proper care is taken of them, many of the more expensive will last for years, and in that way alone may more than pay for themselves.

# Recipes

FERN FERGUS

## Pineapple Custard

| | |
|---|---|
| 2 c. milk | ⅓ c. sugar |
| 2 eggs | 2 slices pineapple |
| 2 tbsp. cornstarch | 3 tbsp. powdered sugar |
| 1 tbsp. water | |

Scald milk, beat egg yolks, and add scalded milk. Mix cornstarch and sugar together with cold water and stir into the milk. Cook until slightly thickened. Dice the pineapple into a pan and pour the custard over it. Beat the egg whites, add powdered sugar and spread on top of custard. Bake slightly and serve.

## Protose and Potato Roast

| | |
|---|---|
| ½ lb. protose | 2 boiled potatoes |
| ½ medium sized onion | 2 cups brown sauce |

Slice protose one-half inch thick, and place in an oiled pan; on each slice place a very thin slice of onion; broil about 10 minutes. Slice the potatoes over the protose and cover with brown sauce. Roast in an oven one-half hour.

## Celery Chowder

| | |
|---|---|
| ½ cup diced celery | 2 cups milk |
| ¼ cup diced onion | ½ tsp. savora |
| 2 cups water | ½ tbsp. butter |
| 1 cup diced potatoes | ½ cup canned tomatoes |
| Salt | |

Cook the celery and onions in the water until almost tender, then add the diced potatoes. When tender, add the milk, savora, tomatoes and butter. Reheat slowly and serve.

## Brown Sauce

¼ c. butter
¼ c. flour
1½ c. water
½ tsp. salt
⅓ c. strong cereal coffee
½ c. strained or 2 tbsp. condensed tomato
2 tsp. savora

Rub the flour and butter together. Heat the liquids, but not to the boiling point. Add salt and tomatoes. Pour the liquids over the flour and butter, stirring constantly. Add the Savora and let boil five minutes.

## Prune Pudding

2 c. stoned cooked prunes
¼ c. water and prune juice
¼ c. sugar
2 tbsp. flour
1 tbsp. lemon juice
Pie pastry
Whipped cream

Mix the first five ingredients together, moistening the flour with a little water. Place in an oiled pudding dish, cover with pie pastry, rolled thin. Bake until well browned. Cut in squares and serve with whipped cream on top.

## Grapefruit and Date Salad

1½ c. grapefruit
1 c. quartered dates
French dressing

Remove the membrane from segments of grapefruit, and cut each segment into about four pieces. Stone the dates and cut into quarters. Mix the grapefruit and dates, serve on a lettuce leaf and pour over a tablespoon of French dressing.

## Ribbon Sandwiches

Butter three slices of graham bread and two of white. Build one on the other, alternating the graham and white, and cut in one-half inch slices.

## Raisin Cornmeal Muffins

½ c. cornmeal
1 c. flour
3 tbsp. baking powder
1 tbsp. sugar
1 tbsp. melted butter
¾ c. milk
1 egg
½ c. raisins
½ tsp. salt

Mix and sift the dry ingredients, add milk gradually, egg well beaten, melted butter and raisins slightly floured. Bake in hot oven in oiled muffin pans about twenty-five minutes.

## Hominy and Tomatoes

2 cups cooked hominy
1 cup stewed tomatoes
2 tbsp. butter
2 tbsp. flour
¼ cup bread crumbs
1 tbsp. butter
Salt

Heat two tbsp. butter in pan, stir in the flour, strained tomatoes and salt. Mix the hominy and pour into an oiled baking dish. Sprinkle with buttered crumbs and bake about thirty minutes in a moderate oven.

## One-Egg Muffins

2 cups flour
4 tsp. baking powder
2 tbsp. sugar
1 cup milk
2 tbsp. melted butter
1 egg

Sift the dry ingredients together and add, gradually, the milk, well beaten egg and melted butter. Bake in oiled muffin tins about twenty-five minutes.

## Nut and Cherry Pie

1 lb. protose
½ cup sugar
4 cups cherry sauce
Plain pastry

Place the cherry sauce in an oiled pan; sprinkle with sugar. Place the sliced protose on top of cherries, cover with pastry and bake until well browned.

## Delicious Laxative Gems

Here is a method of using graham flour that is seldom used.

Procure a set of gem irons (not tin) have a good hot fire and heat the irons very hot; have a batter of water and graham flour ready. The batter should not be too thick or too thin, and should be thoroughly beaten. Grease the irons and dip the batter so each division of the irons is about one-third full. Leave in the oven until the gems are nicely browned, and are loose in the irons.

You will be surprised how delicious the gems will be, made in this way. Be sure to have a good hot oven when they are put to bake. More benefit will be derived from graham baked in this way than in bread.

# Child Welfare

## Guiding and Guarding the Children

MRS. FREDERICK SCHOFF

There was a time not many years ago when a woman felt that her whole duty was well done in bearing and rearing her own children.

She had no time to study conditions outside her own home. She knew nothing of the life her own children would face when they left the home nest. She realized in no way her personal responsibility in the making of world conditions. She had not yet awakened to the breadth and depth and height of real motherhood. She had not found her great place in the world-life.

No parent can provide well for his own children unless he helps to make conditions right for all children.

It takes a father and mother to make a home; so it will always take the thoughts of fathers and mothers equally awake to their duty as parents to bring to children their precious right to be well born and well nurtured.

It will take physicians trained to believe in prevention rather than cure; legislators, educators and judges versed in that greatest of all sciences, the right method of child nurture, before children have their rights.

The relation of haphazard unintelligent parenthood is a strong link to the evils in our national life. The cause which has contributed largely to these conditions is the lack of knowledge of the needs of children and the failure to supply those needs. This lack of knowledge prevails in every class of society. To remove this ignorance and replace it by knowledge of the methods which will save child life is the great work the women of today should have in hand.

Today in America with its wonderful development in railroads, telegraphy, telephone, wireless, electricity, public schools and colleges—the babies whom all these material benefits are to serve, come into homes where a large proportion are doomed to death within a year because of ignorance of infant hygiene.

While 300,000 babies a year are sacrificed yearly on the altar of parental ignorance, it has only recently attracted serious attention and even yet has been handled most inadequately. Experience has proved that education of mothers and fathers will save 60% of the lives now sacrificed. That is why every Board of Health in the country should have a Parents' Educational Bureau in every City Hall, where mothers and fathers may come to learn the lessons so essential for them to know. That is why nurses should be a recognized part of the Board of Health, and strict registration of births be maintained, with a child hygiene department. The life of the babe should be guarded with as great care as is now given to preventive measures against contagion and other health matters.

Waste of water power and of forests have called forth the eloquence of men everywhere. Waste of human life, so much more serious, needs now to be considered and the waste prevented.

The only way is through Education of every expectant and actual parent in baby hygiene. Is it too much to ask that every boy and girl has a thorough training in hygiene as part of their required Education for life?

When it has been proved that nearly all blindness is preventable, is it not a crime against helpless infancy not to have every young man and woman know the causes which may entail such darkness on their offspring? In an almshouse in a large American city, so crowded that adequate care and a necessary number of nurses are not possible, a nurse works often fourteen hours a day treating the eyes of the newborn waifs, that their eyesight may be saved, sacrificing herself to make life more possible for these poor, handicapped children.

Would any education be more worth while than to let the whole world know that blindness is not a visitation of God but a violation of God's law?

Again, there is need of parental knowledge before it is too late—and that really means the *young man and woman* must be fortified by education to prevent such a hardship to hundreds who go through life deprived of all that makes life beautiful? Let not one sin through ignorance. Let the whole world know that blindness is preventable and how it may be prevented! A little is being done here and there, but in no way commensurate with the need is this terrible danger to babies being handled. Most States build asylums and support them. The time must come when the educational work to prevent will take precedence of the provision for the care for the blind.

The whole world is aroused today by the white slave traffic and the social evil. Many are the causes suggested, many the remedies proposed. To one who has given serious study to the absolute neglect of parents to educate children in the laws governing life and the proper use of all their God-given functions, the present condition is but the result properly expected from such neglect.

Until parents understand that there are sins of omission as fatal in results as sins of commission, this condition which causes such grave concern will continue.

Again, the present day need of the broader viewpoint by parents becomes evident. The parents are blissfully ignorant, unconscious that their own neglect is at the bottom of much of this disturbance in social life.

Only as parents realize that it is part of their duty to fortify their boys as well as their girls against life's temptations, by constructive, definite teaching as to the high, holy functions of life, will there be any marked change.

To correct any fault, it is first necessary to perceive its existence. Parental realization of duty in this direction, and knowledge how to perform it, will do more than any other one thing to remove this evil from our midst. The home and the church are the agencies which are naturally required to consider and meet this need, and they should qualify themselves to do it efficiently.

The parents' association in school or church becomes the class where such problems should be discussed and studied. It is easy to say, "Let the school do it." But why should the school attempt to relieve the home and the church of this responsibility to the child?

The world cannot get along without homes, and homes have functions just as important, yes more important, than the schools. Too long has it been taken for granted that because parents are remiss, schools must take more than their share of responsibility for the child. The real need is to help the parents and the home, to strengthen the educational work properly belonging there, and let the school have the time to do its own part of the educational work.

The proper correlation of the home, the church, the school and the state in the several functions toward children for which each should be responsible will do much to strengthen and increase the opportunities for children. As America is today, neither agency is functioning with a clear, definite understanding of its purpose, its duty, and the best methods of attaining the result.

All four are as yet not sufficiently conversant of the great possibilities in every child or of the ways which will develop them. Mistaken methods blight human lives as surely as they blight plant life.

God created men in His own image and likeness and of the little child He said, "Unless ye become as a little child ye cannot enter the Kingdom of Heaven." Love and understanding of and belief in the child cause his life to blossom and grow. Institution life and wholesale care can never replace the home and personal interest. Too large a number cannot receive the mothering every child needs. Some one who believes in him, who trusts him, who really cares what happens to him, is as necessary to a child as sun to a plant.

Nine States have today made it a law that, provided a mother is a proper guardian for her children, poverty shall not separate her from them, The States have taken an important step forward in protection of childhood by the passage of these laws. They must take yet another step and give to the orphan child the home in a family, the supervision and care that will not be cold charity, but the protection the strong should give the weak. It is through no fault of the child that he is orphaned or worse.

It is a matter of too great moment to the State to leave to the efforts of private agencies. It should be handled not as a charity. Every child is a ward of the State in so far as the State must protect him. For the orphan and waif the State owes that of which the child is deprived and without which he cannot live as he should.

There is no place in the social structure where there is greater need of a better knowledge of children's needs than in the administration of justice to the wayward and erring children. The sacrifice of infant lives is nothing in comparison to the sacrifice of children to a life of crime by mistaken methods of dealing with child offenders. It is this error in treatment, or neglect of any treatment, that has filled reform schools and prisons.

Every child under sixteen is in the formative period of life, liable to commit grave mistakes, but only needing proper guidance to prevent the formation of the permanent habit. The whole question is an educational one. The whole question must be handled by those with skill in seeing how to guide and train and encourage.

Every question of child life is an educational question for either parent or child. It is building health and character. Faults and shortcomings are indications which the specialist in child development knows how to meet. Blessed are the children whose whole lives are not wrecked because they did not meet one who could help them at the time when such help would have counted to eternity!

The establishment of Juvenile courts and the probation system has been the greatest step forward yet taken for safeguarding the dependent and wayward child.

The Juvenile court to reach its best in administration, however, needs to be under the guidance of those who believe in childhoods' possibilities and who know how to bring them out.

The requirements of the average court judge are knowledge of law, and ability to decide on the punishment meet for the offender. These requirements are in no way qualifications for diagnosing the inner life of a child and seeing how to strengthen it when needed.

The jurisdiction of every Juvenile court is of vital moment. It is there that the preventive work, the character building work, may stop the making of criminals.

Just as the ablest medical specialists are chosen to deal with health problems, so it is necessary that the ablest specialists in child nurture shall be chosen to administer juvenile court and probation work. The efforts of the past have not efficiently met the need.

Courts are continually increasing. Each year the work is more. Prisons are crowded far beyond their capacity, largely through the utterly futile methods of treatment accorded to juvenile offenders. Home, Church, School, and State are all in different degrees responsible for the fact that society has so many derelicts.

# A Square Deal

"Is your child getting a square deal? If not, what are you going to do about it?" In these words the new dodger, "WHAT DO GROWING CHILDREN NEED?" just issued by the Children's Bureau of the U. S. Department of Labor challenges every parent. In simple, concise language the essential requirements for the normal growth and development of the child are listed under the headings: Shelter, Food, Clothing, Health and Personal Habits, Play, Education and Work Religion and Moral Training.

These simple standards include nothing that is not fundamental. It would be easy for the parent to check each item and discover in what respects, if any, his child is not getting what is absolutely necessary for his proper development.

While the average, well-to-do, intelligent parent could probably rate himself 100% efficient in maintaining such standards as these for his children, it would be a fortunate community in which every child had correct weight for height; a safe, clean, roomy place for outdoor and indoor play; and schooling for at least nine months a year from 7 to 16 years of age; or even clean, whole garments and three square meals a day.

These dodgers can serve the community, as well as the parent, as the basis for a survey of its children. "Has your child these?" is a question not only for parents, but also cities, towns, and villages. The children's rights, in a democracy, are without exception, all children's rights.

# Feed the Children

The need for surveys to reveal exactly what a child ought to have in order to be properly reared and what his chances are for getting it under present conditions is one of the topics emphasized in the 7th annual report of the Chief of the Children's Bureau of the U. S. Department of Labor, which has just come from the press. "Considering the possibility that the high cost of living may endanger the health of the growing child if economies are made in the food, clothing and other commodities used by him, intensive and general surveys should be made at this time to ascertain the irreducible minimum requirements of a growing child, and how their attainment is being affected by high prices."

Special investigations made by the Children's Bureau in three American cities show how babies have suffered as a result of the advance in the price of milk. In Baltimore, of the 728 children between two and seven years of age, only 29 per cent are now having fresh milk to drink as against 60 per cent a year ago; in Washington, half of those between two and seven years visited by the public health nurses were receiving no fresh milk to drink; and in New Orleans conditions were even worse. Add to this the statement made by Dr. William R. P. Emerson, that about one-third of all American babies and school children are malnourished, and that from twenty to forty per cent of those graduating from elementary schools are physically unfit, and you have a situation that demands attention.

While national attention has been drawn to the food needs of the child, little attention has been given to the other factors, such as housing, clothing, and recreation, which affect his development. Studies of the type recommended by the Chief of the Children's Bureau would seek to determine all a child's needs. They would be based upon actual living conditions in various types of communities; and would accordingly have a practical and not merely a theoretical value. Through them mothers would obtain an authoritative statement concerning the basic needs of growing children, and communities would be given an insight into the way in which those needs may be met.

# Sturdy Bodies for Working Children

The imperative needs of physical tests for children about to enter employment and of continuous supervision over the health of children at work has received national recognition in the organization by the Children's Bureau of the U. S. Department of Labor of a permanent committee to determine physical standards for working children.

Little has been done up to the present time in the United States to prevent children from going into work for which they are physically unfit, and practically no study has been made of the effects of early labor on the growth of the body. Yet the children who begin work between the ages of fourteen and eighteen, and in many instances as early as twelve or even younger, are the children of least resistance in the community. They are in general the children of the poor, and in consequence, are likely to be the ill-nourished, the undersized and the anemic; already handicapped, their growing bodies can put up no resistance to the exacting demands of industry on muscles and nerves. During these maturing years they are peculiarly liable to injury from overstrain and peculiarly sensitive to all sorts of industrial hazards.

A great deal of the work done by children is, moreover, totally unfit for them. It often involves too much sitting, or too much standing, the carrying of weights beyond the child's strength, the overexercising of one set of muscles at the expense of another, and in certain occupations, the loss of sleep. Foreign investigations have shown that the sickness rate among juvenile laborers is alarming, especially during the second year of working life, when the injurious effects of early labor upon already undeveloped bodies have had time to make themselves felt.

A "physical minimum" for children entering employment was provided in the standards adopted by the Children's Bureau conferences held in Washington and other large cities in May and June, 1919. This minimum declared that "a child shall not be allowed to go to work until he has had a physical examination by a public-school physician or other medical officer especially appointed for that purpose by the agency charged with the enforcement of the law, and has been found to be of normal development for a child of his age and physically fit for the work at which he is to be employed." It is provided also that "there shall be an annual physical examination of all working children under eighteen years of age."

But what constitutes "normal development" for boys and girls of different ages, and what indicates that a child is "physically fit" for the employment which he is about to enter? Only through exact observation and measurements can it be demonstrated that a child is unfit for certain kinds of work, or that too early and too exacting labor is endangering his physical development. The standards to be applied constitute a vitally important part of the problem of child labor.

The committee appointed by the Children's Bureau will undertake to provide these standards. The committee consists of: Dr. George P. Barth, Director of Hygiene, City Health Department, Milwaukee, Wis., chairman; Dr. Emma M. Appel, Employment Certificate Department, Chicago Board of Education; Dr. S. Josephine Baker, Chief of Bureau of Child Hygiene, Department of Health, New York City; Dr. C. Ward Crampton, Dean of Normal School of Physical Education, Battle Creek, Mich.; Dr. D. L. Edsall, Dean Harvard Medical School; Dr. George W. Goler, Health Officer, Rochester, N. Y.; Dr. Harry Linenthal, Director of Industrial Clinic, Massachusetts General Hospital; Dr. Anna E. Rude, Director Hygiene Division of U. S. Children's Bureau; Dr. Thomas D. Wood, Chairman on Health Problems and Education, Columbia University, New York City.

# The Slaughter of the Innocents Continues

The war is over, but the slaughter of the innocents continues, not by the bayonet or the heel of the Hun, but by the ignorance of mothers. From this cause, 150,000 children will die this year. Says Margaret Hughes, Director of Child Welfare in Montana:

"To save this vast number would not call for new and wonderful discoveries in science or medicine, but just better care, more sanitary surroundings and improved living conditions. Poverty, bad housing, unsanitary conditions, impure milk or water supply, improper feeding, ignorance of mothers on care and feeding of children, and irresponsible parenthood are some of the factors just as deadly to child life as the German bayonet or the Hun heel. A Government agent, who has conducted many investigations as to the causes of infant mortality in America, has published these statements: 'There is no occupation in America so hazardous as just being a baby' and he brings this out clearly by comparison, saying *a man of eighty has a better chance of living a year than a newborn babe.* When we see an aged and tottering old man and a young babe together, we involuntarily think, there is the beginning and the end of life; and yet, the baby is more likely to die within the year than is the old man."

# MEDICAL PROGRESS

# The Value of Milk in the Diet

EMMA FRANCIS

The increase in the price of milk the last few years has decreased its consumption. Statistics show that during normal times 18 per cent of the food of Americans consisted of milk, butter and cheese. The price of each of these foods has doubled since the war.

In 1917 Chicago used 1,250,000 quarts of milk a day; one year later the amount had decreased to 700,000 quarts or 56 per cent.

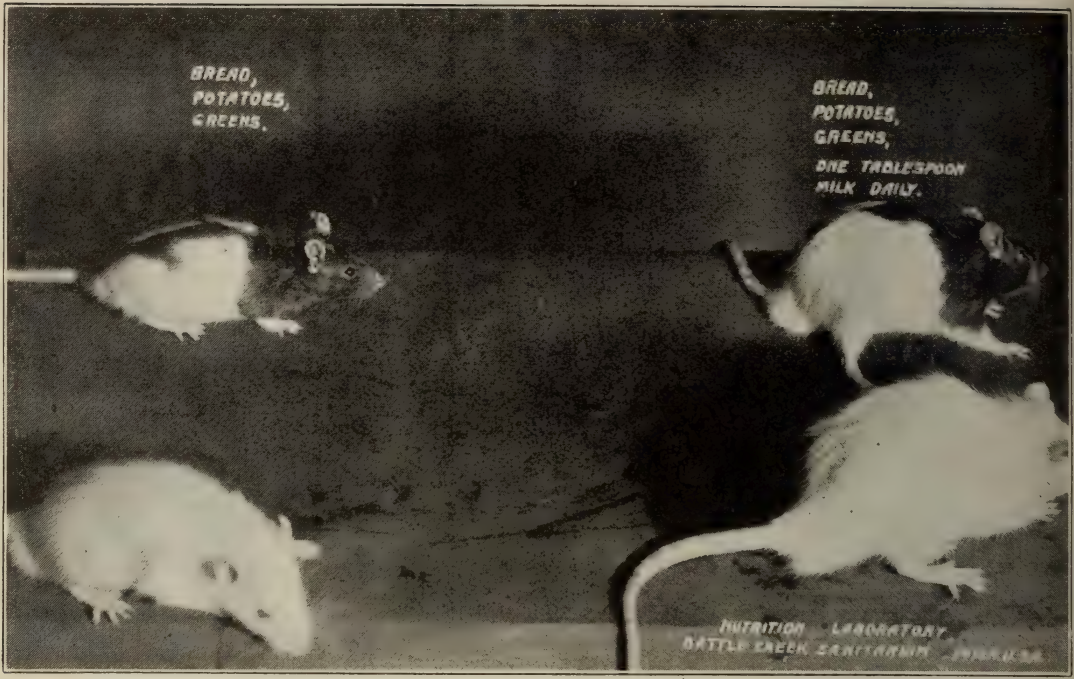
A milk survey made in Baltimore to determine how many of the 756 children were drinking milk, showed only 202 receiving it. That is, 26 per cent of the children were drinking milk in 1916, while a survey made the year before showed that 60 per cent drank milk.

A similar survey made in 1918 in Battle Creek, Mich., a city of 40,000 inhabitants, showed that from 422 children of 225 families from representative sections, only 58 per cent, were receiving milk, and 13.3 per cent were receiving neither milk nor butter. Seventeen per cent of the children drank tea or coffee. Of the 422 children, there were 384 between one and ten years of age.

In a questionnaire given the children in the public schools of Battle Creek, 35 per cent of the first grade children said they drank milk and 40 per cent said they drank tea or coffee. The figures for the other grades run parallel with these as to tea or coffee; second grade, 56 per cent; third grade, 64 per cent; fourth grade, 31 per cent; fifth grade, 37 per cent; sixth grade, 50 per cent; seventh grade, 31 per cent. If tea or coffee is used as a beverage, it excludes from the diet a large share of the amount of milk that should be used, namely, a quart a day for each child until twelve or fourteen years of age—ten years as the lowest limit. The Battle Creek survey showed that in the families where children were not drinking milk, the proportion of milk that each child in the family would receive in the tea, coffee, or cooked dishes used by all members of the family was .35 of a pint.

Children need 15 per cent of protein to supply the body needs, and milk is a valuable source. The adequacy of the diet of children not receiving milk, depends upon the amount and kind of protein contained in the other foods consumed; and also upon the amount of green leaves included in the diet. The lack of knowledge in the poorer families as to food values is the cause of much malnutrition. The emphasis put upon the value of a quart of milk a day for each child, *no matter what the price of milk,* cannot be too strongly made.

Malnutrition in children has become of great importance since England found that three out of five men were unfit for service in the Boer War. The unfitness was traced to malnutrition during childhood. In 1914, 5 per cent of New York school



children were under-nourished. In the next few years the figures increased to 6 per cent in 1915, 12 per cent in 1916, and 21 per cent in 1917.

Quoting Miss Lydia Roberts of the Children's Bureau of the Department of Labor: "In 1919 the number of under-nourished children has actually increased; on the other hand, the number of children in the best nutritive condition, as opposed to fair, has also diminished. Medical officers attribute the decrease of marked malnutrition to the higher wages which have made the purchase of an adequate diet possible. The decrease in good nutrition they believe is explained by the anxiety of mothers to fall in with the voluntary rationing of the food controller."

The diet chosen as a basal diet in the following experiment to show the value of small amounts of milk in producing growth, reproduction and rearing of the young, was 72 per cent of graham, whole wheat or bran bread, 8 per cent of baked potato, 20 per cent of greens, all dried weight.

Hindhede, the Danish investigator in nutrition, had under his observation a man upon a diet made up wholly of bread, potatoes and plenty of greens for over a year. The question that we wish to answer is, Can the young grow upon this diet?

Bread forms a large part of the dietary of man. In a study of twenty-one typical American family dietaries, made by the Government prior to 1895, seventeen of these families received 30 per cent of the protein of the food from cereals. The other four families consumed respectively 11, 40, 45, and 49 per cent of cereal proteins.

Sherman found little difference in the utilization of bread made from different cereals. A diet in which 95 per cent of the protein came from bread protein was well utilized.

Neither pigs nor rats could be made to grow at the University of Wisconsin Experiment Station upon wheat alone, or upon wheat and a mineral salt mixture. On wheat alone, the coats of the pigs became rough and the joints stiff. The addition of salts produced growth to the weight of 90 and 124 pounds as a maximum in two pigs. The addition of 13.4 percent of casein and a suitable salt mixture produced a normal and vigorous animal. The results with the rats were the same. Wheat, 70% supplemented with butter fat and salts, produced growth below normal. The addition of 13.4 per cent of casein and eliminating the butter fat, gave growth above normal, but the animals became emaciated and showed lack of the fat soluble vitamin by the edema of the eyes, at the age of six months. A diet of wheat 64 per cent, casein 13.4 per cent with salts and butter fat produced growth and the rearing of five litters of young.

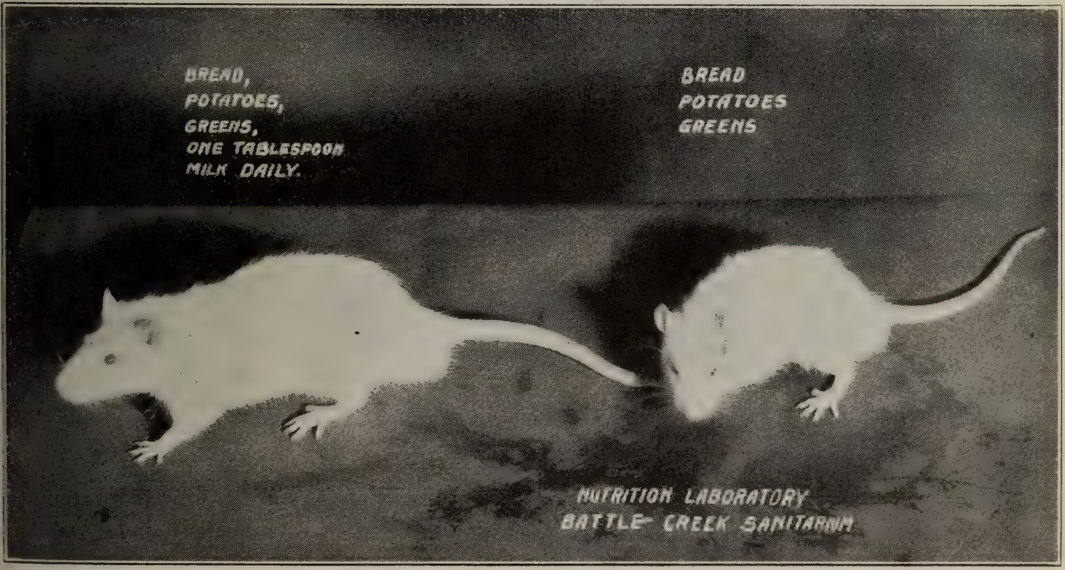
Bread and milk have been used as a control diet in some of the pioneer work with animals. The adult animals in our laboratory given milk and whole wheat or graham bread *ad libitum,* did not give maximum reproduction records. All young were raised but proved to be below par at the weaning age. A carefully controlled experiment on bread and milk has not been done.

Bread is generally made with small portions of either milk or milk powder, added to produce a good coloring of the crust and to increase the nutritive value of the loaf. The bread used in this experiment contained no milk or milk powder.

A flour made from the whole grain is far superior to that made from the endosperm. Bunge fed two groups of rats on bread, one group on bread from white flour, and a second group on bread made from flour in which bran was included. *The bran fed rats gained five times as much as the rats fed on white bread. The hemoglobin was higher in the bran fed rats.*

It has been shown by Osborne and Mendel and by McCollum that 18 per cent of protein of most of the foods is sufficient for the growth to maturity of the laboratory rats. A few proteins, such as casein and lactalbumen are more efficient. Twelve per cent of casein gives normal growth, while 9 per cent causes below normal growth.

Taking 18 per cent as a basis, 72 per cent of either whole wheat, graham or bran bread was used in this experiment. Twenty per cent of dried leaves furnished an abundance of fat soluble vitamin as well as an abundant and varied salt mixture. Five per cent each of any of the following green leaves were used—mustard, spinach,



White adult rat on Bread, Potatoes, Greens grew from 40 g. Nov. 7 to 133 g. Feb. 21. No litters. Black adult rat on Bread, Potatoes, Greens and one tablespoon raw milk daily, grew from 40 g. Nov. 7 to 149 g. Feb. 21. Nine young 3 weeks old weighed 13 to 19 g. each, total weight 166 g.—17 g. more than mother.

turnip tops, dandelion, carrot tops, celery leaves or radish tops. Some of the greens were gathered during the summer, freed from stems, washed, dried in a vegetable or fruit drier over a low gas flame and stored in cans in the powdered form. Others were dried shortly before using. The bread and baked potatoes (freed from skin only) were also dried and ground. The finely ground materials were weighed, mixed and again put through the mill. The second milling seemed to be necessary to insure the consumption of all the greens. The animals picked out the bread and potato powder and left the large particles of greens untouched. None of the food was wasted when the mixture was put through the second milling process.

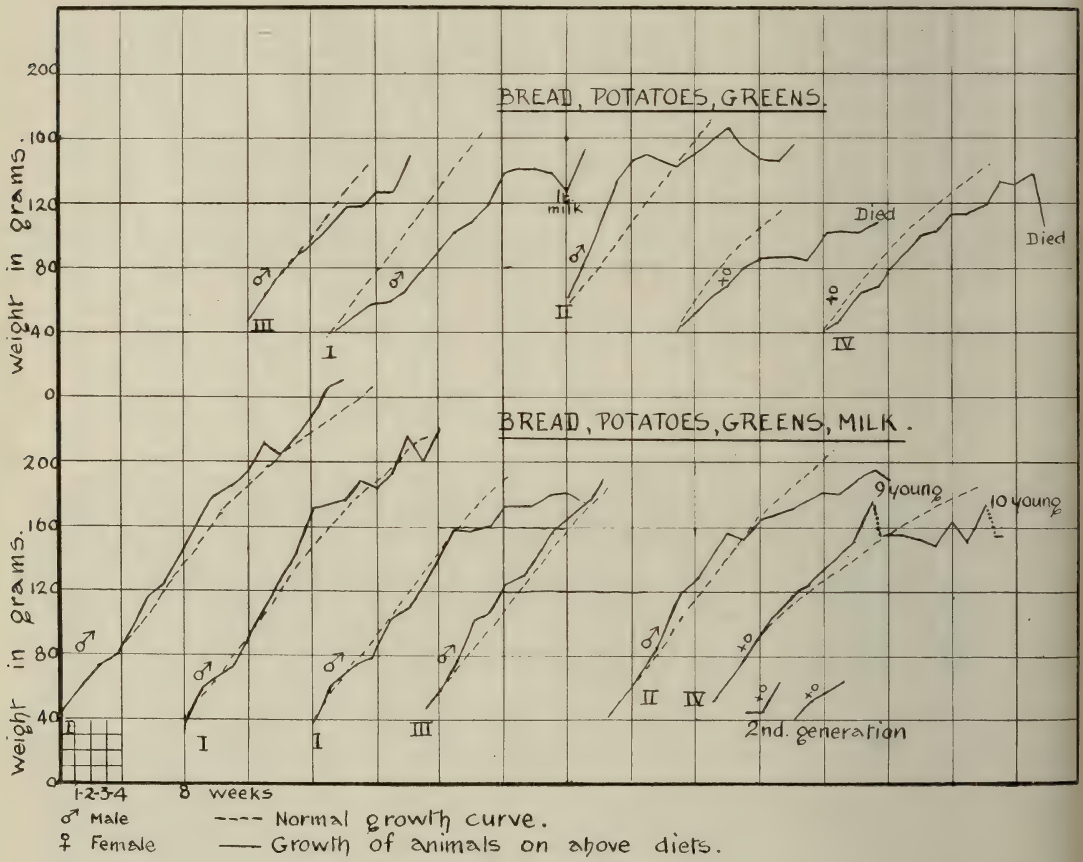
Two groups of rats were placed on this diet, one group receiving in addition one tablespoon of milk per rat per day. In order to get comparable results, the animals were divided into pairs; two white males whose weights were practically the same at the beginning of the experiment were put: one on the basal diet, that is without the milk addition, and the other was given the milk addition. Similarly, two females were paired as to weight and age, the white rat on the basal and the black rat on the milk diet. The groups were kept in separate cages, side by side, but the food for both groups was taken from the same jar. The milk was carefully measured out each day, one tablespoon for each rat, and all of the group ate from the same dish. Not all the milk was consumed at one meal until the animal was well grown. The curves of growth show little variation, therefore the amount of milk consumed by each rat must have been practically uniform except in the case cited, where the young animal was placed on the experiment after the others were half grown. The young rat did not receive its full share of the milk and possibly this increased the consumption by the older rats. This excess divided among five animals was practically negligible in effect. The difference in growth between the two groups has not been so marked as might be expected, but the group without the milk addition shows faulty nutrition in the roughness of tail, ears thickened or with rough edges, and warts on the nose. The coat is in rather poor condition.

The difference in the growth of the pairs was noticeable in three weeks, although the group without the milk addition was making an occasional gain of eight to twenty grams a week. At the present writing, at six months of age, the white rat on the milk addition is 112 grams heavier than the white rat without the milk addition. The latter rat was saved from collapse by the addition of one teaspoon of milk daily. The black female has raised a litter of nine, two of them making fair gains on the mother's diet, and the others growing on other diets. The black female has now raised a second litter of ten. The other pair, the white rat, grew slowly although showing the roughness of tail and ears, and a large wart one-fourth inch long on her nose. At the age of five months, growth ceased, the rat became emaciated, moved about slowly and died. A second rat on the same diet has gone through a similar experience. Death was probably not due to diet only, but an inadequate diet lowered resistance to exposure and disease. All these animals were exposed to cold in moving them about and across several States during the time they were used for demonstration purposes before groups of Home Economics workers. *The milk group shows no pathological conditions from the same exposure.* A second female in the milk group bore a litter of eight, but were not raised.

The diet, consisting of whole wheat bread equal to four slices, baked potato equal to one-fourth or one-fifth of a medium sized potato, and an abundance of greens is efficient enough to produce growth in rats to the age of five months. Donaldson says a year in a rat's life is equal to thirty years in the human life. Then these rats represent children at fifteen years of age. Many children from the poorer classes live

The white female, the rat of the same age and size as the black female, grew to 133 grams, rapidly declined in six days to the weight of 102 grams, and died. The photograph was taken two days before death.

upon diets little or no better than this one. They eat largely of white bread which is lower in protein, salts, and vitamin content than the whole wheat or graham bread. The leaves of plants are higher in salts than the roots or tubers. The children eat carrots, turnips, beets, etc. Givens found that the carrot tops contain two to three times as much salts as the carrots; beet tops contain fifty times as much calcium as the beets. The nitrogen content of leaves has also been found to be not a negligible quantity, as heretofore supposed. The amount of potato is so small that neither the salt nor the protein content can be much affected. The diet of bread, potatoes and greens is probably deficient in its protein content. The greens should furnish sufficient fat soluble A, for the figure of 30 per cent deemed necessary by McCollum has been found to be high; Steenbock and co-workers find that 5 per



The chart shows, graphically, the rate and extent of growth of six rats on the milk diet, and five on the same diet without the milk. Curves indicated by the Roman numeral I represent animals practically the same in weight at the beginning of the experiment, the differences in weights varying from 0 to 4 grams. The curves labeled II, III and IV also represent animals having the same weight at the beginning of the experiment. Curves III are of animals that were unusually vigorous and large for their age. The growth impulse in both animals carried them along the normal curve line for two to three months, then the one without the milk addition dropped behind.

These two animals were placed on the experiment later than the others, and as young animals were placed with those of the older group, Rat III probably did not get his share of the tablespoon of milk, and as a consequence did not make the gains that the other animals did. Rat II in milk, group showed a motor nerve disturbance throughout its life, which interfered with later growth.

cent of spinach contains sufficient fat soluble A for growth.

The diet of the poorer class is made more efficient by the use of meat, a complete protein. But meat is noticeably low in salts. Can the varied diet of roots and tubers supply enough salts? As an example of a diet low in fat soluble A and salts, the one reprinted from *The Helping Hand* by the *Home Economics Journal* is a good one, and it is also pitifully meager and unappetizing:

"One Polish widow, with four children, in a family which has recently come to the Federated Charities for assistance, was asked to keep a menu of the meals which she served her family for one week. At the end of the week she handed to our worker the menu, which is copied exactly below.

Meals—3-17-'19 to 3-23-'19.

Monday morning, Bread with butter.
dinner The same
Sopper Potatoes
Tuesday morning Ballony
Dinner Cake
Sopper Potatoes
Wenesday morning Downuts
Dinner harings
Sopper Macaroni
Thursday morning Bread with lard
for dinner the same
Sopper Tomato soup
Friday morning Cake
Diner Bread with butter
Sopper rice
Saturday morning Bread Just
Dinner sausage
Sopper potatoes
Sunday sausage
Dinner tomato soup
Sopper the same."

A glass to one pint of milk a day for each child should have made as much difference in their growth, as the tablespoon of milk has done with the rats.

The value of the school lunch with its glass of milk is inestimable to the children who are not getting milk at home.

What is it in the small amount of milk that makes up the deficiency of the bread, potatoes and greens diet? Is it protein, calcium, fat soluble A, or because there is value in the fresh food? Further work is planned to determine this. Experiments in which the proportion of bread and potatoes is nearer that of the human dietary, that is, less bread and more potato, are now running.

# The Fatal B. Botulinus

Recent medical journals report an outbreak of botulism in New York City which caused the death of the six members of an Italian family who ate the ripe olives which were the source of the poisoning.

The B. Botulinus appears to be a widely distributed organism. Outbreaks of botulism are being reported from different parts of the United States. In former times the attacks were generally traced to the eating of spoiled canned fish, but recently the cause of several outbreaks has been traced to the use of ripe olives.

Care should be taken in the use of olives to avoid those that are unduly soft or that have the slightest unpleasant flavor.

## Sprouted Beans a Cure for Scurvy

Observations made by Drs. Chick and Hume have shown that sprouted beans are an excellent, perhaps the very best, remedy for scurvy. The beans are sprouted at a temperature of 60° F. for forty-eight hours. About four ounces a day are given to the patient, and the results obtained are better than from the use of lemon juice, even when fresh. Long cooking destroys the value of the sprouted beans for preventing scurvy, as is also true of most other antiscorbutic foods. The beans should be cooked barely enough to make them palatable. The Chinese prepare sprouted soya beans as a salad, in which form they are quite palatable even when eaten raw.

## Milk in Colitis

Lewis, a Spanish physician, observes that milk generally aggravates the symptoms in colitis, causing flatulence and colic and sensations of oppression, with a tendency to constipation. If it seems necessary to give milk to relieve hyperhydrochlorhydria, it should be combined with cereals.

## Beaumont's Discovery

The following paragraph is said to have appeared in the *Mackinaw Ledger* of 1852, soon after Dr. Beaumont began his remarkable observations of Alexis St. Martin's stomach:

"Dr. Will Beaumont has had a lot of luck lately in studying how the stomach works. A certain Canadian halfbreed named St. Martin, while fooling with a gun, blew half his side off, and now the doctor can look right into the machinery. He is writing a book on the subject; and unless we miss our guess, he is going to make some New York doctors sit up and take notice."

And the New York doctors did "sit up," and the whole world of doctors have been taking notice ever since. Beaumont's opportunity was unique, and he improved it to the best possible advantage.

## To Melt Paraffin for Use on Burns

Place in a tin cup half a pound of acetate of soda. When just melted, remove from the heat and set into the melted acetate of soda a smaller cup containing the paraffin.

The temperature of the paraffin melted in this way will be a maximum of 138 degrees F. The heat of the acetate will remain nearly the same for two or three hours, or until it becomes solid. When it is wanted for use again, simply melt the acetate by holding the cup over a flame, or set it in boiling water until the acetate is melted.

This device will keep the paraffin in perfect condition to use for two hours.

## Influenza Due to Several Bacteria

When the influenza first appeared in this country in severe epidemics, the suggestion was put forward that the disease was not due alone to the bacillus discovered about that time by Pfeiffer, but was the result of infection by a group of bacteria which had started out together on a marauding expedition around the world. An Italian bacteriologist now announces a discovery which seems to confirm this idea. This view explains the peculiar erratic behavior of the disease. Sometimes one germ is dominant, at other times another.

## Getting Rid of the Mosquitoes

The Rockefeller Foundation, in its report for the year 1918, gives an account of an experiment carried on in four towns in Arkansas, the purpose of which was to demonstrate the possibility of ridding a community of the mosquito pest.

"As evidence that it is well within the means of a community, it was shown that the per capita cost was only 44 cents. The results as tested by the number of calls made by physicians on persons who were suffering from disease were striking. In Hamburg, Ark., the number of calls fell from 2,312 in 1916 to 59 in 1918, a reduction for the period of 97.4 per cent."

## No Bovine Tuberculosis in the Malay States

According to the *London Lancet,* Dr. Clark, the health officer of Kinta, has made the observation that bovine tuberculosis does not exist in the Malay peninsula, notwithstanding the fact that tuberculosis in human beings is extremely rife, accounting for one in six of all the deaths that occur in Singapore. That the Malays do not contract tuberculosis from cows is also clearly shown by the fact that milk is seldom used in this part of the Orient. Among the Chinese, even children very rarely take milk. The soy bean and the peanut and a vegetable milk prepared from these seeds, takes the place of milk in supplying essential vitamins.

## Blood Changes in the Capillaries

Korogh, of Copenhagen, has recently demonstrated that the capillaries are, like the very small blood vessels, contractual, and that there is an enormous variation of the amount of blood contained in them. In a muscle which is resting, for example, most of the capillaries are so tightly closed by contraction that they do not permit the passage of blood. In an acting muscle the capillaries are dilated and may contain as much as 750 times the minimum amount of blood found in them. This observation explains the disappearance of blood from the large vessels which occurs in shock, a matter which has been a great puzzle to physiologists.

## Iodine the Best Disinfectant

Lambert has shown (*Journal of Experi-Mental Medicine,* 1916, page 683), that iodine is one of the most efficient and least harmful of all disinfectants. He found experimentally that a solution of iodine of one part to one thousand, would not injure living cells exposed to it for one hour, but would destroy all bacteria within this time. This makes it one of the most satisfactory of all known disinfectants.

## The Carob Bean or St. John's Bread

The carob bean, or St. John's bread, a native of semi-tropical countries, has a sugar content of nearly 25 per cent. It also contains more than 4 per cent of protein and nearly 9 per cent of crude fiber, or cellulose. These properties give the carob bean a higher value as a nutrient than has heretofore been appreciated. Feeding experiments have shown, in fact, that the ground carob bean is nearly equal to ground barley as a food for calves. Its carbohydrate being in the form of sugar, it should be found easily assimilable by human beings, and used as a ground meal should also prove valuable as a roughage food useful in combating constipation.

## Goldenrod Not a Cause of Hay Fever

Scheppegrell has shown that the pollen of goldenrod is not a cause of hay fever. Hay fever is only caused by the pollen of plants which are wind-pollinated, that is plants the pollen of which is scattered by the wind instead of being carried by insects. The goldenrod is pollinated by insects exclusively. Its pollen is never found in the atmosphere; hence it cannot be the cause of hay fever.

## Mortality of Bottle-Fed Children

In a maternity hospital at Tours, France, the mortality among the infants was very great, reaching 50 per cent in 1916. A new regulation was then adopted, requiring every mother to remain for three months to nurse her own child. She was given board free and twenty-five cents a day as wages to serve as a wet nurse for her own child. The result has been the reduction of the mortality rate from 50 per cent to 2.7 per cent, a saving of 94 children of each hundred that under the old plan of bottle feeding would have died. Of the 300,000 babies that die annually in this country not less than 280,000 succumb to bad feeding.

# PUBLISHER'S LETTER BOX

## Forty Years a Subscriber

Mrs. L. D. Henry,
*Milford, Nebr.*

"My first subscription to this magazine dates back over forty years, when I was living in Chicago. I have surely watched it grow."

## Enjoys Good Health at Seventy-Six

John Scullen,
*Bellevue, Ohio.*

"I am pleased to say that I have been a member of your Good Health family for a number of years, and am now past seventy-six years, enjoying good health, which I attribute to your biological form of living."

## Millions Should Read It

F. D. Haimbaugh,
*Muncie, Ind.*

"Good Health Magazine undoubtedly has made a place in the heart of the public which no other publication could possibly fill. It is interesting, entertaining and very instructive. The advice it offers from month to month on the care and preservation of health, is worth while and no doubt when followed proves of great value. Good Health, when once known, will become a constant visitor in every household where the conservation of health is desired. Sensible, sound and sane on the issues discussed, the magazine is worthy a place with right-thinking people. Millions could profit by the perusal of its pages."

## Saves Health and Money

Mrs. A. J. Rawson,
*E. Lynn, Mass.*

"I appreciate your magazine very highly and realize it has been a help to me, and saved me many dollars in doctors' bills and medicine."

## An Excellent Magazine

Prof. A. Levanzin, A. B., Ph. D., LL. D.,
*Los Angeles, Calif.*

"I have been a subscriber to your excellent magazine for six years and have paid for advance subscription for two years more. I like it very much, especially the excellent articles by Miss Francis."

## Twenty Years a Subscriber

Mrs. Lizzie Beresford,
*Fairhope, Ala.*

"I have been a subscriber to Good Health since 1900, and feel that it has been a great help in teaching me how to live. I am 63 years of age, and could I have had it 40 years ago instead of 20, might be in better health today. I had injured my constitution by taking so many drugs. I take none now, and get along pretty comfortably by living the simple life. With best wishes for the future of Good Health."

## Some Progress

Henry Lovell,
*Worcester, Mass.*

"Your journal was familiar to me away back in the 70's, although not a subscriber at that time. Compare a file of that date with one of the present year. Some progress! I credit your present issues as forming the best journal of its class in the U. S. A. Much more might truthfully be said in its praise."

## Scientific and Practical

E. D. Metcalf,
*Buffalo, Wyo.*

"I enjoy every number of Good Health and believe I count more on its regular arrival than on any other magazine or paper. The scientific and practical character of its editorials gives it special interest to me."

GOOD HEALTH

VOL. LV JUNE, 1920 No. 6

## EDITORIAL DEPARTMENT

# The Health Market

Health is a commodity. It has its price and is procurable. It is the most universal of all commodities. It is an investment. You can make big investments, good, paying investments, or little, losing, bad investments, in health.

Every breezy hilltop is a health emporium where good, paying investments may be made. Every ray of golden sunshine holds a wealth of health waiting to be garnered by the health prospector.

Every summer breeze bears health and vital energy, good appetite and good digestion, sound sleep and good spirits on its wings.

Everybody not hopelessly swamped by disease, may have health if willing to pay the price.

But health cannot be bought with money. It must be paid for in good habits.

Right living is the legal tender in the health market.

Biologic living is the one price for all, which must be paid, and there are no discounts, and no credit given.

# An Efficient Peace

Good Health is a strong partisan of peace. War is a calamity, a tragedy. But we want an efficient, not a mollycoddle peace. The draft examinations showed us that a very large proportion of the young men of the country are inefficient, weaklings, mollycoddles. Only half of our young men between the ages of 19 and 31 are capable of being trained for military duty! What a lot of weaklings we are.

Universal training is absolutely necessary. It is, indeed, unfortunate that training in the art of war is apparently necessary; but if we cannot have the physical training needed for health and efficiency in any other way, let us get it as we can. If we must fight, it is certainly better to know how to fight efficiently than to be an easy mark for the enemy. But our legislators seem to have gotten a real inspiration for once, really a novel experience in the babel of jargon and wrangles which has prevailed at the capitol for many months past. The universal training bill before congress provides brief periods of training for all young men, in which instruction in military tactics will play a comparatively small part. A considerable part of the time spent in the training camp will be devoted to scientific physical training, the study of personal hygiene, American history, and training in various trades and scientific agriculture.

The thorough medical examinations which all young men will receive under the system of universal training will be of immense value to the whole population.

The instruction of young men in social hygiene and the discipline to which, regardless of station in life, they will be subjected, will be invaluable in its results.

If General Wood (Dr. Leonard Wood) gets into the presidential chair, we shall undoubtedly soon see established an efficient Department of Health, with a cabinet officer at its head, and in due time we shall hope to see evolved, not merely a system of training for the young men of the country, but a proper system of training for the young women of the country as well, and a thorough health supervision of the whole population.

# Professor Pavlov Still Alive

It will be gratifying to the friends of food reform who recognize our great indebtedness to Professor Pavlov for his wonderfully ingenious experiments and painstaking investigation, to know that the report of his death was a mistake, and that he is, or was a few months ago, still alive, although not now engaged in scientific work on account of Bolshevik disturbances in Petrograd. In a letter to a friend in Southern Russia, written several months ago, Professor Pavlov stated that he was suffering for lack of food. He was starving, in fact, and at the moment of his writing he was preparing a frugal meal of potatoes.

# Lively Sausages

*The American Food Journal* tells us that "sometimes sausages contain more than chopped meats and spices. If the meat used is not sound and clean, and if the sausage is not prepared in a cleanly way by careful workmen, a perfectly good looking sausage may be the home of many bacteria.

"The bacteriologists have been studying the bacterial content of sausages, and their results are interesting both because of the kind of bacteria that are sometimes found in them, and the fact that ordinary cooking destroys the bacteria. It has been found, for instance, that an uncooked sausage containing 132,000,000 bacteria to the gram, contains no living bacteria after it has been thoroughly fried. While we are justified in demanding that our sausages be made from sound meats and under such conditions that they are not contaminated with bacteria, yet it is reassuring to know that a link sausage fried until crisp is a safe food.

"Some people fear the character of the skin used as casings. A careful study of the bacterial condition of casings has not shown them to be unfit for food, nor does their use in any way render the sausage meat with which they are stuffed more subject to bacterial invasion."

The above paragraphs are a coarse mixture of fact and non-fact. The bacteriologists find countless millions of bacteria in sausage, as above stated, and it is true that after the sausage has been "thoroughly fried," no living bacteria are found, but the editor neglected to call attention to the fact that while no living bacteria are found in fried sausage, there are found plenty of "spores" which, given a fair opportunity for growth in some corner of the human intestines, rapidly blossom out into full-fledged putrefactive bacteria, and multiply at an amazingly rapid rate.

And so a link of sausage is not a "safe food," even though "fried until crisp," and then there are plenty of people who eat their sausages half cooked, certainly much short of crispness, and hence swarming with live bacteria as well as "spores."

The sausage is made of odds and ends and scraps of meat which are often moldy and putrid, frequently mixed with maggots and other detestable things, and sausage-makers are practically always compelled to put preservatives into their product to prevent it from becoming loathsomely putrid before it has reached the consumer's stomach, for which it was intended.

The only proper place for sausage is a crematory or a potter's field.

# The Tea Mongers are Busy

*The American Food Journal* tells us that "five years from now, if there is any virtue in advertising, the people of the United States are going to drink many times the amount of tea that is consumed now."

On what does the *Food Journal* base this prophecy? On the fact that "a campaign is being planned (by the tea association of the United States) that will extend over a period of perhaps five years and will cost all the way from one million to two million dollars."

The tea dealers have been led to organize this movement to promote the use of tea by the fact that the coffee trust is planning, according to *Printers' Ink,* to "spend two hundred and fifty thousand dollars per year for four consecutive years to increase the consumption of coffee." The tea trust proposes to raise the money to pay for its advertising campaign by making a levy of one-fifth of a cent on each pound of tea shipped into the United States. The one hundred ten million pounds of tea annually received through the custom house will thus create a fund of more than two hundred thousand dollars, which is to be supplemented by a similar fund raised among the planters of tea in foreign countries.

It is proposed to start this campaign very soon, as the work of raising the money and perfecting the organization has been going on for two years or more. The country will soon be flooded with eulogies of tea; the newspapers will teem with misinformation about tea. Every effort will be made to create millions of tea-topers in all classes of society. If the association succeeds in its efforts to greatly increase the consumption of tea, the effects will soon be shown in the increasing number of tea neurasthenics. Sanitariums and neuropathic institutes will flourish everywhere and the population of our lunatic asylums will increase.

With the tobacco trust, the coffee trust, and the tea trust all conspiring to entice the public to consume their respective poisons in increased quantity, merely for the purpose of increasing the profits of these poison mongers, isn't it about time for the public to awaken to the fact that we are in danger of becoming a dope-ridden people? It is to be hoped that these extraordinary efforts to promote the sale of disease-producing drugs may produce a reaction and an awakening of the public to a sense of its danger.

# The Tobacco Trust's Boycott

The Rotary Clubs are organizations of business men founded upon the practical application of the Golden Rule. Among the altruistic activities which they have undertaken is work for the physical and moral welfare of boys. The organ of the Rotary Club is *The Rotarian,* and in its March number it published an article by Professor W. A. McKeever of the University of Kansas entitled "How to Defend the Boy." In this article, Professor McKeever warns against idleness, gambling, stealing, the underworld, and the cigarette, and suggests that Rotarians who wish to help the boy might wisely abstain from smoking, in order not to set a bad example. *The Rotarian,* like most other magazines, publishes advertisements, and in its March number gave a full page to a much-advertised brand of cigarettes. A correspondent of the *Tobacco Leaf,* in its issue of March 25th, takes *The Rotarian* to task for publishing in the same number a cigarette ad. and an article which shows the evils of cigarette smoking by boys. Has not the advertiser, in this case, a just grievance?

The Interchurch World Movement is an organization of some thirty Protestant denominations, designed to advance Christianity throughout the world, which means practically the extension of the Golden Rule. Some of the largest of these denominations, recognizing that smokers have practically repealed the Golden Rule as far as smoking is concerned, have officially declared against the habit. Among these are the two great branches of the Presbyterian church and the two great branches of the Methodist Episcopal Church. The Salvation Army does not allow its officers to smoke.

A well-known New York weekly, in a

recent number, published a full-page advertisement of this Interchurch Movement, but on the reverse of the same cover it also published a full-page advertisement of the very brand of cigarettes which called forth the protest in the *Tobacco Leaf*.. Has not the advertiser as good a case against this periodical as against *The Rotarian,* and is he not justified in claiming that the magazine which takes his money to push his business is not giving him a square deal, if it also helps a movement which is antagonistic to his product? In other words, can a periodical serve both God and mammon and be really independent?

*The Red Cross Magazine* has recognized the inconsistency of promoting health and undermining health in the same columns, and has therefore recently excluded tobacco advertisements, in reversal of its former policy.

The time is at hand when the editors of all magazines will have to decide whether they or the advertisers are in command.

# Some Lies Which are Not Lies

Professor Phillip B. Hawk of Philadelphia has within the last year or two been publishing articles under the heading "Some Popular Lies Told about Eating." The title is significant, although the phrasing would be improved if it read, "Some Lies about Eating," for, in truth, these articles claiming to be based upon scientific experiments, are highly misleading. They purport to demonstrate that hot bread is harmless, that bolting meat is harmless, that drinking water *ad libitum* at meals aids digestion instead of hindering it, that drinking ice water at meals and the rapid drinking of milk do not incur risk of indigestion. All of these things human experience has shown to be unwholesome and more or less dangerous and to be avoided by one who prefers to maintain his digestive functions intact, and especially to be tabooed by one whose digestive organs are more or less impaired.

Professor Hawk draws his conclusions from the fact that he was able to subject the stomachs of healthy men to these various abuses without immediate apparent injury. This is the same old argument with which we are all familiar. It has been brought forward in support of liquor drinking and tobacco-using, the tea and coffee habit, the breathing of bad air, neglect of exercise, neglect to breathe properly, neglect of the bowels, and any number of other unhygienic practices that could be named. Just the other day the writer received a letter from a man who maintained that infrequent movement of the bowels is conducive to health, and offers proof by the fact that he enjoys good health, though moving his bowels but once in two weeks.

Professor Hawk's experiments simply demonstrate how much abuse a healthy stomach is able to endure before it surrenders to disease. Fortunately, we are all born with a certain margin of safety. The first violations of biologic law may not give rise to any tangible ill effects; the bodily functions are performed as usual. The individual thinks himself invulnerable, perhaps, priding himself upon the fact that he can do with impunity things which are considered harmful. He is unaware of the fact that a hidden damage is being done, the effects of which may be irreparable. His margin of safety is being consumed. When it is wholly exhausted, he will begin to realize the damage which has been done, but the injury, unfortunately, will be irreparable.

Professor Hawk says: "First, as to hot bread. There is a deep-seated impression founded upon nothing more substantial than 'opinion,' that hot bread is indigestible. It is believed to form in the stomach firm, plastic, doughy masses which resist the action of the gastric juice."

Nobody, we are sure, except Professor Hawk ever imagined that hot bread "is believed to form in the stomach firm, plastic doughy masses." It is in the mouth that these doughy masses are formed, not in the stomach. Hot bread, plastered with butter, and swallowed in the hasty manner in which most people eat, reaches the stomach in the form of "doughy masses." If, as Professor Hawk says, "it is quite true that we can make a very firm doughy mass from hot bread if we press it together with the fingers," it is equally true that such masses may be formed from hot bread "if we press it together with the teeth and tongue." After demonstrating that such hot bread can do the stomach no harm because "the stomach does not possess fingers," a very absurd conclusion, the Professor is finally compelled to admit all that anybody has ever claimed as the objection to the use of hot bread, remarking:

"To be sure, it takes a little longer for the gastric juice to penetrate hot bread than it does to penetrate bread that is a day or two old. For this reason the stomach empties a little more slowly when it is asked to digest hot bread. But this is no cause for concern, since a few minutes, more or less, in the emptying time of the stomach has no important digestive significance."

The above quotation displays very clearly the pit into which Professor Hawk has fallen. He imagines, because it makes very little difference to a healthy stomach whether bread is stale, and hence quickly digested, or hot and slowly digested, that it makes no difference to any stomach. This is a fatal error. The hot bread which causes the healthy stomach to empty a little more slowly when taken into a stomach which empties slowly, even when supplied with the very best of food, may upset the digestion altogether and enormously lengthen the time required for digestion. This principle applies to all sorts of unhygienic practices. Infractions of the laws of good digestion which are apparently followed by no ill effects whatever in healthy persons make all the difference between comfort and discomfort, good digestion and no digestion at all, in persons whose digestive powers are impaired.

Again Professor Hawk says: "The husky lumberjacks and longshoremen, with a memory of a lifelong immunity from stomach trouble, continue to bolt their three square meals each day in blissful ignorance of the fact that they have a stomach or that the dictionary contains the word masticate."

Evidently, Professor Hawk is badly handicapped by his lack of opportunity for clinical observation. He is a chemist, a laboratory man, and not a physician, and on this account is not a safe counselor in matters dietetic. It is true that husky lumberjacks "bolt their three square meals each day," and until recently they also have been in the habit of bolting a lot of bad whiskey, besides doing many other equally unwholesome things. But it must not be imagined that the lumberjack goes on doing this forever with "immunity" from stomach troubles and other troubles. Some of the worst cases of gastric disorder the writer has ever encountered were in the cases of men who had spent a few years of their lives in lumber camps and whose stomachs had been subjected to the sort of treatment described by Professor Hawk as innocent. Cancer of the stomach, catarrh of the stomach, ulcer of the stomach and other gastric disorders, are common among these men, notwithstanding the great advantages which they derive from their out-of-door life and vigorous bodily exercise.

Professor Hawk complains that notwithstanding the publication of "over twenty scientific articles" and "in spite of the wide dissemination of our findings, which show conclusively that water-drinking with meals is a good, sound dietetic custom for normal persons, many books on dietetics condemn the practice. And they condemn it solely on the basis of 'statements' and 'opinions' which have been handed down, through a long row of years, from one 'big book' to another. However, when we look for *proof* that the drinking of water at meal time is bad, we fail to find it. In other words, there is no experimental basis for the anti-water crusade."

Certainly, all intelligent writers on dietetics still condemn the practice of copious water-drinking in connection with meals, and they will continue to do so in spite of Professor Hawk's protests. When a man has looked at the sun and seen it, he has established for himself the fact that the sun exists, and a million laboratory experiments by men who have not seen the sun will not prove its non-existence.

Professor Hawk says: "Desiring to know just what would happen to a normal man who drank freely of water with meals, I was delighted when one of my college associates volunteered to be the 'goat' for our first water test."

One would think from the above paragraph that Professor Hawk was the first person who ever experimented upon a normal man for the purpose of determining the effect of water-drinking. The subject was elaborately studied by Professor Pavlov of St. Petersburg, years before Professor Hawk began his investigations.

Something more than a dozen years ago, the writer visited St. Petersburg, now Petrograd, for the purpose of getting first-hand information respecting the wonderful work done by the Russian physiologist in the experimental investigation of the functions of the stomach. He learned from Professor Pavlov and his associates, in confirmation of statements previously published in his classical work on the digestive juices, that taking a quantity of water into the stomach gives rise to the production of an increased amount of gastric acid. The increase is not so great as to cause any serious disturbance in a healthy stomach, but in the case of a person whose stomach is already making an excess of gastric acid, the drinking of a quantity of water may be the means of so greatly increasing the difficulty as to give rise to great distress and to constitute an insurmountable obstacle to recovery. It is an easy inference, also that the habitual use of liberal quantities of water in connection with meals, like the liberal use of meat, meat juices, meat extracts or other gastric stimulants, will in time produce pronounced hyperacidity.

Scores of times the writer has been told by persons suffering from indigestion something like the following: "Doctor, I have the worst sour stomach you ever heard of. If I even take a glass of water it will sour my stomach." Of course the water did not sour. It only stimulated the stomach to make an excess of acid. This excess of acid is, in fact, the usual cause of so-called sour stomach rather than fermentation, as was formerly supposed. The stimulation of the stomach to which Professor Hawk refers is the real objection to the free drinking of water at meals rather than the "dilution" of which he speaks.

It is very unbecoming for Professor Hawk, who is himself not even a physician, and has had no opportunity for practical experience in dealing with sick people, to ridicule the pathologist who studies with his microscope the effects of the changes which take place in the mucous membrane of the stomach, as the result of erroneous habits of eating and other unwholesome practices. The cells which manufacture the gastric juice, when for a long time over-stimulated, become worn out and then cease to functionate. The hyperacidity which results from copious water-drinking at meals, as well as other forms of abnormal stimulation, sooner or later ends in degeneration and the disappearance of the gastric acid, which is one of the most important defenses of the body, since it is upon the presence of this acid in the gastric juice that we depend for protection against the millions of harmful bacteria which are always finding their way into the stomach through the mouth and the nose. It is perfectly true, as Professor Hawk says, that "the entrance of water into the stomach causes these gastric cells to work much harder than before, that they consequently manufacture much more gastric juice." But this is exactly the reason why the practice is harmful and objectionable. Professor Hawk is mistaken in supposing himself to be the discoverer of the interesting fact that water-drinking increases the activity of the gastric glands. As we have already stated, Professor Pavlov, of Petrograd, published this fact to the world many years ago, long before Professor Hawk had even begun his misleading laboratory studies.

Certainly, water is necessary for good digestion; but we don't want too much of it in connection with the food. As taken into the stomach, most food contains from three-fourths to nine-tenths its weight of water. The drinking of water in moderation at meal times is not at all harmful for the ordinary individual and promotes digestion; but the practice of drinking water to wash food down is injurious. A glassful of water at a meal is quite sufficient and harmless for persons in health. But those whose stomachs are already producing an excess of acid should avoid water drinking as well as broths and thin soups.

Professor Hawk tells us of 16 medical students, each of whom drank a quart of water each meal for a week "without producing a single qualm of indigestion, either gastric or intestinal." Because these 16 healthy students were able to abuse their stomachs by over-distending them with water at a time when food was called for is no evidence that it is a wholesome practice. Water may be taken in moderate quantities at meals without injury and often with benefit, but the fact remains that the best time for taking water is an hour or two before meals, at bedtime, and on rising in the morning.

Professor Hawk taxes our credulity to the limit when he tells us of an experiment he made for the purpose of determining the effect of ice water and of "boiling hot coffee" upon the temperature of the contents of the stomach. He tells us that "in twenty minutes after drinking a glass of water as cold as we could make it, the temperature of the stomach contents was approximately the same as that of the rest of the body. And in a like period of time the temperature of boiling hot coffee was also brought down to that of the stomach walls."

We readily understand that the Professor could get some ice water into his stomach, but are not prepared to believe without further evidence that even Professor Hawk's stomach would stand the "temperature of boiling hot coffee" or that he ever had an opportunity to determine the length of time required for bringing down the temperature of the gastric contents from the boiling point to body temperature. The Professor is evidently as reckless in the use of language in describing his experiments as he is in denunciation of the simple dietetic rules which ages of experience have shown useful and necessary for the preservation of gastric health. Dr. Wm. Mayo, the eminent surgeon, tells us that hot coffee is one of the causes of cancer of the stomach.

The conclusion at which the Professor arrives respecting the use of ice water is that "the alleged chilling effect of ice water and the consequent delay in the digestion of our food is seen to be of no real significance under ordinary conditions." Here, again, it may be observed that the Professor has simply demonstrated how much abuse the *healthy* stomach is able to stand. He admits that ice water delays digestion even in a vigorous stomach, but he has not shown us what is the effect of ice water upon a feeble stomach, crippled by disease, or what is the effect of the continued use of ice water at meal times during a term of years.

The Professor not only tells us that meat when bolted is better digested than when properly masticated, and likewise *recommends* the bolting of milk. He tells us that he studied the taking of milk by the aid of "a college professor who had the ability to empty his stomach at any desired time by regurgitation. With the professor's assistance we studied the question of the curding of milk, and among other important findings we established the fact that when milk was sipped it curded in larger curds than when it was drunk very rapidly. Since then there has been no milk sipping in my household.

"We are told that the people of this country consume at least twenty-five million quarts of milk per day. If all this milk were sipped, it would entail an aggregate loss of over one thousand years of eight-hour working days every twenty-four hours. If you don't believe it, get your pencil and figure it for yourself, allowing eight minutes for the sipping of each quart. In any event the milk sippers of the country are responsible for a huge economic waste."

Nothing could be more unscientific than to lay down a general proposition based upon a single observation. Evidently, the college professor upon whom Professor Hawk experimented was possessed of a rather "slow" stomach. Normally, the stomach always contains some hydrochloric acid. Evidently, the professor's stomach had no acid in it at the time the experiment began. As he slowly sipped the milk, appetite juice was developed in his stomach, the rennet ferment was likewise developed, and so a tougher curd was formed when the milk was taken slowly than when it was taken rapidly. The result is quite different when milk is taken into a stomach containing a large amount of acid, as, for example, in connection with an ordinary meal. The acid and rennet present under such circumstances will cause the formation of large and tough curds. The writer remembers a case in which the effect of bolting milk was quite different from that observed by Professor Hawk. The case was one in which the free use of milk was thought desirable. When this was recommended to the patient he at once made protest, declaring, "I cannot take milk. The last time I took milk it nearly killed me."

"How did you take the milk? What did you take with it?" the patient was asked.

He replied: "The last time I took milk was several years ago. I came home one night very late. My wife was in bed asleep and I stepped into the pantry to see if I could find something to eat, as I was also very hungry. I found nothing in sight but a panful of milk. I rapidly drank a large portion of it, as I was thirsty as well as hungry. I went to bed, fell asleep at once, but I awoke about three o'clock in the morning and found myself sitting up in bed with a choking sensation. There seemed to be something in my throat. The choking grew worse. I feared I would suffocate. I put my finger down my throat in the effort to dislodge something which seemed to be choking me. I got hold of the end of something and pulled it out. It proved to be a rope of milk more than a yard long and the size of my finger."

Pavlov says, "Appetite means juice." It is evident that the man's stomach was well stocked with gastric juice, so that when the milk was rapidly swallowed it formed a large tough curd. In the feeding of milk to many hundreds of patients subjected to the milk regimen, experience has shown the taking of milk slowly as so important that the patient is invariably required to draw it through a straw or a small glass tube. In this way patients are able to take as much as six quarts of milk a day without difficulty; but when the milk is bolted, indigestion often occurs.

Finally, in concluding his attack upon time-honored rules of wholesome feeding, Professor Hawk says: "My associates and myself have become so used to torturing the defenseless and confiding stomach of man with all sorts of terrible concoctions that we even entered into a diabolical plot to try out on a few unsuspecting stomachs some such combination of digestion disturbers as those mentioned above. And while we were doing the job we determined to do it right, by asking the owners of the stomachs to bolt bob veal sandwiches, made with hot bread, and to drink rapidly a fifty-fifty mixture of ice-cold distilled water and boiled milk during the process.

"However, after many conferences with members of my staff, we finally concluded, in view of the possible fatal outcome of the test, that we would form a suicide pact and make the test upon ourselves as a penance for our past food offenses. Accordingly, this 'feast of death' was prepared and eaten by certain members of the staff, who were selected by secret ballot."

The Professor reports that no casualties occurred, from which he concludes: "Therefore, let us eat, drink and be merry, for hot bread is as digestible as cold; bolted meats are as satisfactorily digested as those more thoroughly chewed; the drinking of water at meal time aids in the digestion of our food," etc.

This is bad advice. All the Professor has proved is that he and his colleagues have extraordinary stomachs. They may be able to keep on eating in the fashion described for several years. It is astonishing how much abuse a healthy stomach will bear. It really takes years and years to produce a first-class case of chronic dyspepsia. But when the stomach is once broken down and crippled, a life-long damage is received. If the Professor and his colleagues will themselves follow the advice they are giving the public through the *American Magazine* and other journals, in the course of five or ten years they will become splendid subjects for a sanitarium, and will perhaps have learned to have wholesome respect for the cumulative experience of the medical profession through some hundreds of years of clinical observation. Such announcements as that of Professor Hawk, made in a sensational way, are calculated to throw discredit upon the medical profession and upon carefully checked clinical experience, and are well calculated to do a vast deal of harm; for there are always plenty of people who are glad to be encouraged in the cultivation of their pet follies and foibles and to welcome any sensation monger who is ready to justify them in their wrong-doing.

Professor Hawk has exposed no lies but he has promulgated some very dangerous fallacies.

# Walk Six Miles a Day

Dr. Leonard Hill, an eminent English physiologist, according to a pamphlet issued by the British Medical Research Committee, maintains that sedentary persons should habitually walk at least six miles a day, and insists that this amount of out-door exercise is necessary for the maintenance of health for persons who work indoors.

In walking six miles an average person weighing, say 150 pounds, would expend in out-door exercise about one-fifth of his total intake of energy; that is, one-fifth of the food eaten would be consumed by his walking exercise. This estimate is based upon the fact that walking one mile on a level is equivalent to lifting the body 400 feet in a vertical direction. The energy expended in a six-mile walk would be equal to that required to climb a vertical ladder 24,000 feet, or a little less than one-half mile high.

The estimate of Dr. Hill is in close agreement with the views of the writer, he having for many years followed the practice of recommending for sedentary patients an amount of work equal to one-sixth of the energy capacity of the body, in addition to the exercise required for ordinary light occupations.

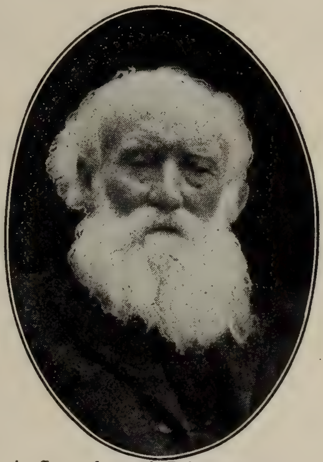
J. H. Kellogg

# Young at Eighty-two

### JOHN BURROUGHS

[A few months ago, Mr. John Burroughs was a guest at the Battle Creek Sanitarium, and gave the following informal address in the Sanitarium parlor. GOOD HEALTH readers will be interested to read these words of the well-known naturalist.—ED.]

I have not come here to make an address. I think it is true I have lived the simple life or I would not be here tonight. I was born in the country and lived on the farm until I was seventeen years old, and then I taught school. I have always lived the simple life. I never used tobacco, tea, coffee or whiskey, and I have managed to keep pretty well, so at eighty-two and a half I have lived longer than any other man of my name that I know of. My father lived to be eighty-one; my grandfather lived to be only seventy-three. On my maternal side my grandfather lived to be eighty-eight. He was a soldier of Washington in the Revolution. I may reach eighty-eight or ninety, I don't know. I will live as long as I can enjoy life and do my work. So far I have been able to do my work pretty well and keep going—my mind a-going and my body a-going.


A Snap-shot of John Burroughs taken at Battle Creek, Michigan.

I have written, altogether, thirty-two books. I have three more to come. I take the same interest in things that I ever did. This year I spent some time up at Woodchuck Lodge, where I was born, and I walked in the forest and climbed the hills.

Woodchucks are a plague in that country. They eat up the gardens and the grass and commit great depredations, and they seem to be on the increase. It has been one of the questions with me why they are on the increase. I understand they are also on the increase here in Michigan. I think it is because some enemy of the woodchuck has been killed off. There are not as many foxes as there used to be, because there is such a premium on their hides.

Last summer when I was there I walked the hills, for I did not want to stay indoors. I walked the hills and shot over one hundred woodchucks with a rifle. (I can shoot a woodchuck at one hundred yards with a rifle—not all the time, but I get most of them at that distance.) I dressed and tanned all these skins, to see if I could not make some good use of them. I am going to have an overcoat made of them.

I have used Dr. Kellogg's foods—he didn't know it—but I remember twenty-five years ago using his foods and liking them. I have been a small meat eater, but hereafter I shall not eat meat at all. I think one can get enough to eat without eating fish or meat.

I have never stimulated myself to write books or anything else. I am always so busy writing for myself (all my books are a record of my experiences) that I have often had to tell editors of magazines that I did not have time to write anything for them. I have to live a thing before I can write it, so my books are really autobiographical—a record of my life. I cannot write in a perfunctory way. I remember saying that to Roosevelt, and he approved of it heartily.

It might interest you to hear of a visit I had with Roosevelt. It was in a place in Virginia, one hundred miles from Washington and ten miles from the railroad. The place was like a barn. It was just a shell of a building. They ate in one end and cooked in the other, and had chambers where they slept. He asked me to go there to name the birds. It was during the last year of his presidency. We named altogether about eighty. He knew them all but two and I knew them all but two. He taught me Bewick's wren and another bird I don't recall, and I taught him two new birds.

One day after church we went into the fields to see if we could find a Lincoln sparrow. When we first started out we went as if we were walking for a wager. We went about two miles and waited then for a while, lying on the ground, which was an unusual thing for Roosevelt to do. But the bird did not appear; we turned back again and went tearing home. Of course we did not see any birds. I recollect Mrs. Roosevelt's telling him that it was not quite the way to hunt birds.

That evening I remember we sat around the table,I on one side of the table reading a book on the man-eating lions of East Africa. It seems they set out to build a railroad into the interior and the lions killed nearly all the men working on it. They ate up half a dozen men and became more and more ferocious. When a lion once tastes human flesh, he does not seem to care for anything else. A man was sent out there to shoot them. He went in a box car, and while he was there asleep a lion came, jumped into the car and carried him off to the same fate as the others. It was a long while before they succeeded in killing these lions.

We sat there—I was reading this book about man-eating lions, and Roosevelt was reading a book on Lord Cromwell, and his wife sat on the other side of the table engaged in crocheting. I said, "Mr. President, a lion might come and kidnap and take you off."

He said, pointing to his hip, "I go prepared."

Just then I thought a lion had me sure, and I jumped. It was a mosquito. He had struck it with a big stick.

After a while I went out doors and heard something run heavily from one end of the house to the other. I went in and asked him what it was. He said it was a dog. In the morning Mrs. Roosevelt told me it was two Secret Service men who had stood, one at each end of the house, all night on guard. She did not let him know it because it was irritating to him. He did not want any Secret Service men around. He always said he was capable of taking care of himself.

He was a great lover of animals. He was interested in everything. He knew the game birds and the game animals much better than I did. He knew all the little birds also. He was a very remarkable man in that way.

That night there were some flying sqirrels in my room. They had built a nest somewhere in the rafters. In the morning I took the nest of squirrels and put them out. They had been flying around the room all night making such a commotion that I could not sleep. He found them outside and I saw him bringing them back. The blood was flowing from his finger, where they had bitten him, but he did not seem to mind. He put them back into the room and I did not put them out again. I hope they are there to this day.

I had several trips with Roosevelt in Yellowstone Park. One time he put me on a big horse. Now I had never ridden a horse in my life. I said, "I have not been on a horse since you were born." But he insisted on my riding this big horse, and we went over some rough country together and the weather was very cold. We spent two or three weeks there. I went fishing where you can catch cut-throat trout. I caught them but he would not fish. He wanted bigger game than that. As we went along (there was snow there several feet deep), as soon as we got off the trail the horses would lie down.

He was interested in everything. One day as we were going along he saw a mouse. He jumped off his horse and ran after that mouse and caught it in his hands. It proved to be a new kind to the park and he skinned it and prepared it just as neatly as a taxidermist could have done, and sent it to the museum at Washington—a little mouse not bigger than your finger.

He wanted me to get a good view of the elk in the park. We estimated three thousand of them on the landscape below us. They were lying on the snow and on the ground. One day he said he wanted me to get a closer view of those elk. He put me on that big horse again, he riding ahead and I following behind as close as I could. Whenever he would get quite a distance away from me, he would look back and urge me to hurry. I could not go at the tearing rate that he did. The air was very rare and the horses were blowing like bellows. The elk stood at bay, with their tongues out, not 50 yards away. Roosevelt stood there laughing. A day or two afterward he wanted to go out and see some sheep that I had seen. He wanted to go alone into the wilderness. He did not have much chance to be alone. The man who had charge of the park said, "I do not think it safe for the President to go into the wilderness alone."

But he would have no one go with him. He said, "Major, you put me up a lunch and I will come back all right."

He wandered and walked ten miles and found the mountain sheep where he expected to find them, crept up on them and just looked and laughed, I can imagine. He didn't want to shoot them; he just enjoyed looking at them. I have a picture of him taken just after he came back from that trip. It is one of the best I have. It brings back the day and the occasion and I value it very highly. That is the kind of man Roosevelt was. He took such a kindly interest in everything. His death is a great loss to the country. I wish we had him in these times of indecision and irresolution.

# Injury from High Heels

The *Pennsylvania State Medical Journal* tells us that "the present extremely high heels worn by the majority of American women, both old and young, mean deformity of the feet.

"Roentgen-ray pictures, indicating the relation of the toes to the ground when they are encased in these high-heeled shoes, show that women are walking on the ends of their five toes. There is food for thought in the fact that the horse nowadays walks on a foot consisting of one toe, while in the more primitive animal there were three or five toes.

"The shape of the natural foot of man has a great variety of uses, and it is one of the things that have helped to place him first in the life of the earth. The natural foot has been one of the anatomical facts that have helped him to his present high state of efficiency. The form of that foot has enabled him to become a good hunter, a good farmer, a good sailor, a good soldier —in fact, anything he has found it necessary through the ages to become or finds now essential for the war we are fighting to continue our personal liberty.

"Let the butterfly girls and the other

high-heeled old and young women stop and realize the value of the normal foot of man. Let them cut off the high heel and substitute the natural level. This might also work out to the interest of direct economy by using the surplus heel to make thicker soles on the shoes, which would be very sensible and practical for our climate.

"Let us recognize the models of nature which have led us to success. If man's foot had been abused for an indefinite time in a way to have reduced it to a one-toed foot, resembling the horse's, he would have a hard time trying to fulfill his present duties in life.

"The high heel represents the fashion of the women of today, and means a great discounting of the value of mankind, particularly if it is continued a long time. The present high heel is not only tortuous, but of great injury to the health. The mother must remember that she is partly responsible for the feet of her children, and that if she wants them to have normal, strong feet, she must keep them naturally shod."

# A Flesh-Abstaining Dog

Dogs are carnivorous animals; that is, they usually eat meat. For many years it has been the writer's belief that dogs and perhaps all of the carnivorous animals are not meat eaters because meat is the only food by which they can be sustained in health and vigor, but because it is the only food accessible to them in a wild state which is suited to their digestive organs. When the forests were filled with nut-bearing palms, cocoanuts, breadfruit, bananas, edible mushrooms and other foodstuffs which are digestible and assimilable in a raw state by dogs as well as by apes and human beings, these creatures could easily obtain an ample supply of nourishment from the natural products of the earth without resorting to the slaughter of other animals. That this state of things once prevailed is clearly shown by the following passages from Elliot's work, "Prehistoric Man," which pictures the condition of things supposed to exist in this part of the world three million years ago:

"On the bushes by the rivers and along the shore there were all sorts of fruits and nuts. For the subsistence of our lemur-monkey-man in the early stages of evolution, what fruits would seem *a priori* most suitable?

"I think that one would select the banana and breadfruit. Ancestral forms of both were flourishing in the Eocene. Many other fruits with which man has been afterwards continually (perhaps one might venture to say *most intimately*) associated occur at this period. These are, most of them, found in so many places that one is apt to think they were then of world-wide distribution.

"In the temperate brushwood and on river-sides, acorns, hazel-nuts, hawthorne, sloe, cherry, and plum might be found. Here and there he might alight upon a walnut or almond; figs also of one kind or another seem to have been common. Palm-trees existed, and some of them were of enormous size.

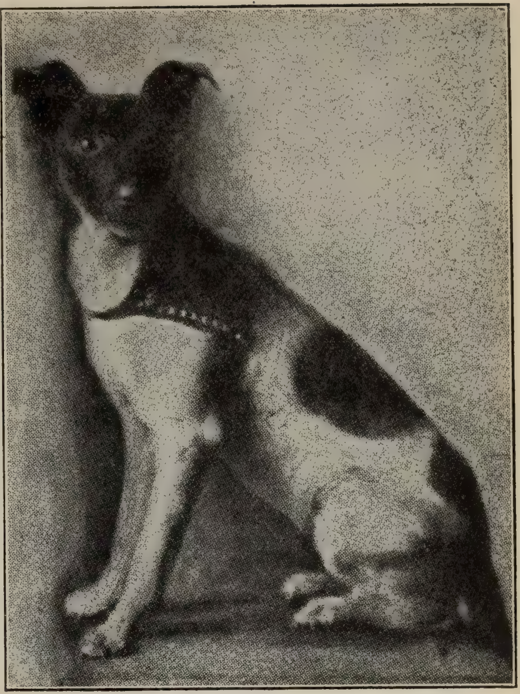
"If the idea of climatic and other conditions which we have tried to express is at all correct, there ought to have been many bulbs; but these would seldom be preserved as fossils, for they would grow in drier land away from the river bank. Birds, who had not yet learnt any special fear of mankind, would nest in the bushes and roost in the branches. There is nothing to show whether the honey-ant, termites, and the honey-bee existed in the Eocene. With honey, in addition to the other items given above, the lemur-monkey-man could have found every article of diet which is of importance to the lowest races of mankind. A Yahgan, Bushman, or Vedda would consider a land like this a paradise. Moreover, there was not, so far as we are aware, any carnivorous creatures in the Eocene period, or one which might have been a serious enemy."

From the above, it is clearly evident that the necessity for eating flesh was forced upon the members of the animal kingdom by the rigors of the Asiatic winters which accompanied the great masses of ice which moved down from the North during the glacial periods which followed the Eocene, and which mowed down and exterminated the vast forests of nut-and-fruit-bearing trees which then covered this region of the earth.

With nothing else to eat suited to their digestive organs, there was nothing for the famished animals to do but to turn cannibals and fall upon one another. And this was the way flesh-eating began. A strong confirmation of this view, which is coming to be held by scientists, is to be found in the fact that the dog, a typical carnivorous animal, is not only able to subsist upon a non-flesh diet, but on such a diet is in every way a better dog, more intelligent, more amiable, better able to run, and to scent game, than is the meat-fed dog.

The famous hounds of the South are never given meat. Dog trainers do not feed meat to their canine pupils, a fact which pedagogues of boys and girls might well take note of.

In India, pet tigers raised and fed on bread and milk are often permitted to run loose and play about as peacefully and harmlessly as pet cats.



Several years ago, a story was published in a Chicago paper about a fox terrier owned by Mrs. C. H. Mullins, 2157 Monroe St., Chicago, which is of interest in this connection. Mrs. Mullins, being a vegetarian, withheld meat from her pet dog, much to the distress of her neighbors, who so frequently placed meat in the yard for the benefit of the poor dog that it was necessary for her to keep close watch during his puppyhood to see that he did not get a taste of it. After the dog was grown to mature years, however, he needed no watching, for he turned away in scorn from flesh in any form, raw or cooked.

The dog grew rapidly and developed into a fine and handsome animal, as will appear from this picture which we here reproduce.

The dog's diet included celery, lettuce, bananas, nuts, oranges, apples, cooked corn, peas and beans, boiled beets and salads. Such a diet contains all that is needed either by a dog or by a human being, and by its use health, vigor and long life can be more certainly secured than with any other.

The late William Penn Alcott, who died at the age of seventy-six years, had never tasted meat in his entire lifetime.

The editor of GOOD HEALTH discarded meat from his dietary fifty-four years ago, and is still in good health and working hard sixteen to eighteen hours a day.

Many dogs will not eat raw meat. The fact that dogs as well as human beings in many cases soon loose the appetite for meat when abundantly supplied with other wholesome food, is a strong proof that its use is not essential to human life and health.

# Tame Robins

Richard Densmore is a great lover of birds and animals, and while he was spending the summer with his uncle and aunt at Kalkaska, his uncle brought home a nest of four baby robins. These robins were found in a lumber pile; the mother robin had been frightened away and the little ones were crying for food.

Richard had help in caring for the robins from an aunt who was also spending the summer there with him. The care of these robins was no small task, as their food is worms, and no one who has not gathered them can realize how many worms these birds eat.

The work of digging worms became too great for little Richard, and one day as his aunt was frying liver for dinner, Richard asked for a strip that looked like a worm. Then the problem was solved and the birds were fed nothing but liver the remainder of the summer. When it was meal-time, they would make it known by lining up in the kitchen doorway and calling for food. They became very tame and would follow the little fellow everywhere. They would light on his head when he crossed the lawn, play with him in the sand pile, and go with him to the neighbors on errands.

One day Richard's heart was made very sad. Some boys with an air gun had shot and killed one of the little robins; the others stayed with him all summer but went South in the fall with the other robins.

One bright day late the next spring a familiar call was heard at the kitchen door. There were the three robins calling for their food as they had done the year before.

RICHARD AND HIS PET ROBINS.

# For Your Health--Make a Garden

(THIRD ARTICLE)

R. V. ASHLEY

June—the month of leaves and roses, of rare and perfect days; that never comes too early and never stays too long. June—the time when spring and summer meet, the month of youth and dreams, the noontide of the year; the carnival of flowers, the floral culmination of the spring.

During April and May we have experienced a crescendo of garden-making, and our garden activities have consisted largely of preparation and planting. In June our garden work consists more in the care and harvesting of crops of vegetables and flowers already planted. Nevertheless, there is planting still to be done.

And now, to be in harmony with the season, let us make a rose garden. Without the dainty forms and tints of rosebuds and their full-blown fragrance, June would not be June. And always there are new roses we wish to try, more pleasing arrangements of old friends, and prettier combinations to be achieved in the rose garden. Early June is perhaps the best time of all the year for the making of a rose bed. The hybrid teas especially may be transplanted best at this time. The hardy perpetuals, particularly if field grown, should be planted in the fall or early spring.

By June the ground is thoroughly warm, and we may be fairly certain of warm weather conditions with frequent showers—conditions under which roses thrive best.

## Roses and Roses

There are many different classes of roses, and the original classes have been so long subjected to hybridization that at present it is difficult to determine the exact parentage of many of the different kinds. For our purpose, however—the making of an outdoor rose garden—we need consider particularly but two types—the hybrid perpetuals and the hybrid teas.

The hybrid perpetuals are roses of mixed parentage which make large bushes and are absolutely hardy, being proof against the severest winters. They bloom but once a year, usually in June.

The hybrid teas are crosses of the teas with the hybrid perpetuals, and many of them are sufficiently hardy to withstand without protection such winter temperatures as are common in the approximate latitude of 42°.

The tea roses with very few individual exceptions are not hardy and therefore must be classed as greenhouse roses in the North. It is not necessary to enumerate the many other groups of roses, for those suited to our use will fall naturally into one or the other of the two classes with which we are chiefly concerned. The rose family is a large one, as evidenced by the fact that there are more than 4,000 species of the genus in Europe and Western Asia alone.

## Making the Rose Garden

Roses are sun lovers, but our dry atmosphere and hot summers are trying to the flowers, as our severe winter winds are to the plants. They should not be planted near enough to large trees to be shaded by them or to be robbed of nourishment by their roots. A situation which will afford shade until ten o'clock and full sun the rest of the day is almost ideal.

A heavy soil is better for roses than a light one. Roses are known as heavy feeders, so there should be an abundant supply of easily available plant food in the soil in which they are planted. Cow manure is the best of all rose fertilizers. Horse manure is more heating and should not be used unless fully two years old. Chicken manure is better than horse manure. Pulverized sheep manure may be used in the absence of other sorts. Whatever fertilizer is used, it should be thoroughly incorporated with the soil and not allowed to lie in lumps either on top of the soil or below the surface. A cupful of bone meal to each plant should be applied to the soil and thoroughly mixed with it. Air slaked lime in the same proportion may also be applied in the spring and again about the first of August. This serves not only to sweeten the soil but also to release plant food in the soil that otherwise would not be available.

Rose beds should be dug out to the depth of twelve to eighteen inches. The top soil should have thoroughly incorporated and mixed with it one-fourth of its bulk of well rotted manure and then should be returned to the excavated space. If the drainage is poor, there should be a foundation under the soil of eight or ten inches of coarse gravel, stones and cinders overlaid with two inches of ashes.

Hybrid teas should be planted twenty inches apart and hybrid perpetuals thirty inches. If grafted stock is used, the point where the stock and the graft join should be two inches below the surface. In transplanting, care must be taken to avoid exposing the roots to the drying of sun and air. Any broken or bruised roots should be cut off smoothly with a sharp knife. In setting the plants, spread the roots out evenly, sift fine soil over them and press it down firmly. Then water thoroughly and fill in the top with fine soil. The new plants should be so pruned as to leave six or eight inches above the ground.

After the garden is well established, the bushes should be cut back late in the fall to a height of about three feet. Old wood and weak growth should be removed. Then in the spring cut out the wood that has winter killed and cut back the strong branches left to about eight inches, as at the time of planting.

Every four or five years the old plants should be taken up, the roots and tops cut in, and then reset, either in a new place or in the old bed after the soil has been replaced or further enriched by a fresh supply of fertilizer. Unless this is done, the beds will have to be replaced with new stock after five to eight years.

The insect pests of roses may be controlled by a forceful spray of clear water applied morning and evening. An excellent solution to be used with a spray pump may be made up of whale oil soap, fir tree oil, or good soap suds combined with a tobacco extract of some sort. Persian insect powder also is useful. The standard remedy recommended for the rose bug is hand picking into a pan of kerosene. Just recently there has been placed upon the market a spray material known as Malrosine which, if used according to directions, is said to be a certain remedy against rose bugs and other minor insects of the rose.

## Winter Protection

Roses may be protected in winter after the ground freezes by a thick layer, six to eight inches, of leaves or straw. Perhaps a better way is to draw up a mound of earth around each plant six or eight inches high, and then when freezing weather begins, cover the whole with leaves or straw, evergreen boughs or cornstalks.

## Garden Roses Old and New

Of the hundreds of named varieties of hybrid tea and hybrid perpetual roses to be found in catalogues, a comparatively small number are of real and proven merit for the outdoor garden. The others possess greater or lesser faults which make them a trial rather than a joy to the garden enthusiast. The enumeration and description of the one hundred best roses would far exceed the limits of this article. So I will mention briefly only a few of the very best. These are sure to repay you a hundred fold for the care and attention given them.

## Hybrid Teas

Caroline Testout is perhaps the best all around garden rose. It has large double flowers of splendid form and an exquisite pink color with bright center. It is a strong grower and very fragrant. Because of its superlative garden utility it has been called "the slave of the rose garden."

Duchess of Wellington is the best yellow hybrid tea. It is healthy, luxuriant and robust and has no faults. It throws up flower stalks two feet long with only one large elongated bud which makes a very full bloom. The color is a rich yellow and the fragrance delightful.

General McArthur is the peer of red roses. It is one of the earliest and most perpetual flowering sorts. It is good all the time but at its best in autumn. The flowers are of a warm rich crimson color, of excellent form and very fragrant.

Frau Karl Druschki is called a hybrid perpetual, and while it bears its heaviest crop in June, it may be depended upon to produce flowers more or less continuously until late fall. If well disbudded, it will produce magnificent flowers on stems two to three feet long. The flowers are enormously large, like an American beauty, elongated, with snowy petals but, alas, no fragrance. Because of its robustness, size and beauty it is worthy a large place in any rose garden.

Kaiserin Augusta Victoria is one of the oldest white roses and the only white hybrid tea that gives entire satisfaction. The plant is of excellent habits, with flowers borne on stout extra long stems. The buds are large, of splendid form and open up well. Its greatest quality is freedom of bloom, for it bears heavy crops in June and late fall and besides is good throughout the season.

Willowmere is next to Caroline Testout the best pink garden rose. It is a continuous and free bloomer, with perfect terra cotta pink blossoms on long stems. The plant is robust and healthy.

Mme. Butterfly is "a glorified sort of Ophelia, with all the colors of Ophelia intensified." The beautiful flowers are bright pink, apricot and gold. The plant is a free grower and bloomer with handsome foliage free from mildew.

Premier is a clear rose pink which is deeper in cool weather. It is a very free bloomer, with successive crops of flowers on strong, stiff, thornless stems with heavy foliage.

Mme. Edouard Harriot is a recent introduction of unique coloring. The color is described as sunshine on copper or bronze terra cotta. This is a profuse and continuous bloomer. The plant is of spiny growth and glossy foliage. It is not at its best the first year, when it is likely to throw single flowers.

Lady Hillingdon is a deep orange yellow of distinctive coloring. It has long large petals of perfect shape either in the bud or half open. It is a free grower and bloomer and a shapely plant.

Francis Scott Key has more petals than any other rose. The color is a dark, brilliant carmine—quite unusual in a rose. It has enormously heavy buds and blossoms which in spite of their size open well. It has the fragrance of the American Beauty.

Harry Kirk is a deep sulphur yellow, one of the best of all the yellows. It is remarkable for the fine texture of its petals and the robust growth of the plant.

Los Angeles is a new rose introduced in 1917. It is of American origin and is a wonder among roses. The color is a translucent salmon copper pink. Its fragrance is equal to that of Marechal Neil. The buds are long and pointed and expand fully into a flower of mammoth proportions. It is a strong grower, a free bloomer and of fine foliage.

Gruss an Teplitz is an excellent hybrid tea of deep crimson color but too tall to be planted with others of its class. It should be planted with the following, which are of similar height:

Lady Ursula, a flesh pink.

J. B. Clark, a deep scarlet.

W. E. Lippiat, a velvety crimson.

All of these make plants four feet or more in height and if grown as dense bushes make a stunning effect when in full bloom.

## Hybrid Perpetuals

These are roses mostly of bush form that grow to a height of four feet or more. Though they blossom in June only, many of them produce flowers of wonderful size, form and color. The following are a few of the best:

Clio—a delightful satiny flesh of deep pink center, large globular flowers.

General Jackqueminot—brilliant scarlet crimson.

Prince Camille de Rohan—dark blood red.

George Arends—a pink Frau Karl Druschki, a beautiful pink color, different from any other rose, one of the best.

Mrs. John Laing—a soft pink of beautiful form.

Paul Neyron—a clear pink of enormous size, fragrant.

*Rosa Hugonis*—grows in shrub form and is described as follows:

"The plant is formed by a series of slender branches, which grow to a height of four feet and gracefully curve outward, reaching almost back to the ground, so that the plant looks more like a half globe. The wood is thin and has no thorns, but is dressed thickly with a most graceful small rose foliage. The flowers are single, of a rich golden yellow, and appear by threes and fours in every leaf axil all along the wood, so when the plant is in bloom it is a perfect shower of gold. Its blooming season is in July, but even out of bloom it is a picturesque plant, for as the flowers pass, deep red seed pods form, which are again a thing of beauty. The foliage is almost evergreen and plants are in full green up to January."

Conrad Ferdinand Meyer is a hybrid Rugosa rose, but with flowers much like those of the hybrid tea. It is wonderfully robust, dense and covered with thorns, which makes it excellent for a hedge. One enthusiast describes a hedge of these roses thus:

"Some years ago I visited Detroit and saw one garden that was like a fairyland. It was rose time, and from a distance of a mile I saw a most wonderful stretch of pink. I ran toward it, and with every step my imagination grew wilder as to what it could be, and finally I was ready to exclaim, 'How marvelously beautiful!' What a wonderful sight! And, lo, behold, there for a stretch of several hundred feet was a hedge of a most robust growing rose, four to five feet high, trimmed square, with the healthiest foliage (similar to the finest hybrid tea rose), bronze green in appearance, but showered with real double roses of the most pleasing pale pink, and, mind you, the average flower was from five to six inches across. I should say there were from twenty-five to fifty such flowers on a single plant, and now can you realize the picture? Of course I secured the name of the rose and put it away for future reference."

Blanc Double de Coubert is another valuable hedge rose of the Rugosa type which is a true Rugosa in vigor, habit and foliage, but with semi-double, pure white flowers which are most deliciously fragrant. It is also valuable as a single specimen for grouping, or for planting in shrubbery.

The high place held by the rose in the affections of garden lovers is shown by the fact that it loses none of its popularity because it blooms chiefly in June, when there is a greater volume and a wider variety of bloom than in any other month of the entire calendar.

For June bloom in the garden most annuals must be started indoors and transplanted to the garden in proper season. But among perennials there are about 200 varieties whose principal blooming season is in June. I should like to enumerate the best of these, but space forbids. Perennials are a class by themselves and a large one, deserving of more attention than they ordinarily receive from amateurs. I will leave them for future consideration.

*(To be continued)*

# The Sources of Bad Odors in Natural Waters

Doubtless every one has queried about the sources of the fishy and other objectional tastes and odors which sometimes appear in public drinking waters during the hot months. Dr. Hausman tells us in the *Scientific American* of April 17, that these objectionable odors and tastes are due chiefly, not to the decomposition of fish, or the decay of the remains of the higher aquatic plants, as is commonly believed, but to the presence in the central reservoir of numerous micro-organisms. The minute offenders are certain species of algae, or unicellular plants, and protozoa, or unicellular animals. Since the matter of water pollution from micro-organisms is one of large importance to water-works superintendents, as well as to the public in general, considerable study has been made by botanists and zoologists of various troublesome forms. The results of such study have been applied, with varying degrees of success, to the eradication of the evil. Methods of destroying many of these minute forms by mechanical means have been devised, and of removing their characteristic unpleasant odors and tastes by various forms of filtration and aeration of the affected water.

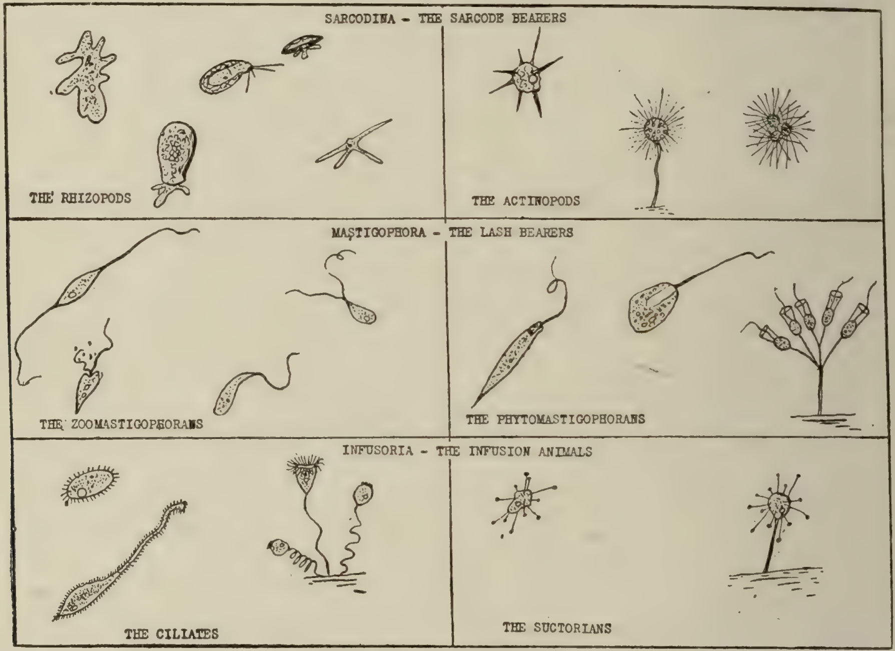
The aromatic odors of drinking water, together with the grassy or "hayey" odors, are, in the main, caused by the growth of the algae, the worst of these being the characteristic "pig-pen" odor, resulting from the abnormally large growth of certain of the filamentous species, and thought to be due to the high nitrogen content of the bodies of these forms.

Possibly the most objectionable of the water odors and tastes are those of the fishy variety, produced chiefly by the overgrowth in numbers of the protozoa, or unicellular animals. These odors and tastes are the results of the growth or of the disintegration of the tiny creatures.

With the growth of some of the noxious protozoan forms certain organic oils are liberated from the body, which may impart to the water a flavor distinctly different from that due to the oils disseminated from the body after the death and disintegration of the animal. Furthermore, odors and tastes sometimes differ in *quality,* as their intensity changes. Thus an odor or flavor which may be innocuous, or even pleasant when but faintly detected, often becomes disagreeable, or even nauseating, when present in stronger amounts.

In many instances these odors and tastes are characteristic of the organisms producing them, and the kind, or species, of the offending organism can, therefore, sometimes be determined upon the criterion of odor or taste alone. The amount of what may be termed protozoan oil required to produce an appreciable odor in drinking water is, in some cases, extremely small. Thus the oil occasioned by Synura (Figs. 5 and 6) can be readily detected when diluted in water to the extent of one part in 25 million. That this oil is of remarkable intensity of odor will be appreciated when it is stated that oil of tansy, which is intensely penetrating, does not give off a sensible odor when diluted with more than one one-million times its volume of water.

Preventives of the growth of the flavor-producing protozoa are much more to be desired than reagents which kill the organisms after they have put in their appearance. Killing the creatures does not at once remove the objectionable flavors which they impart to water; in many cases it may even intensify the evil by assisting in the liberation of a greater number of the oil globules, at one time, from the disintegrating dead bodies. Filtration by special means, and aeration of the contaminated water must then be resorted to. By checking the undue increase of these forms, either by natural or artificial means, odors both of growth and of disintegration are at once prevented, and the need of special filtration and aeration dispensed with.



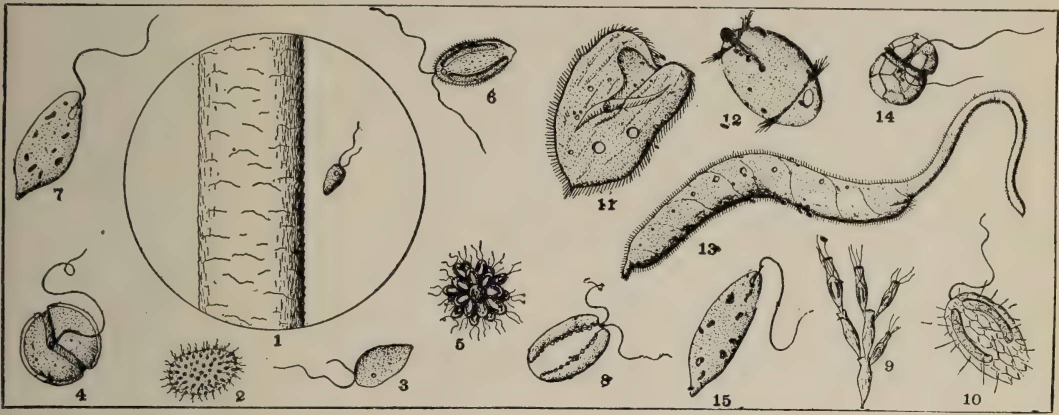
*Cryptomonas,* in small numbers, gives to the water a faint violet-like fragrance, which, not at all unpleasant, and indeed often agreeable at first, rapidly becomes objectionable as the numbers of the organisms increase. Fig. 8 shows a common species, *Crytomonas ovato,* prevalent in pond or river waters. It possesses two broad lateral bands containing chlorophyll, or green coloring matter, and termed chomatophores. A pair of short flagella arise from the anterior end of the body. A very large number of these forms in reservoirs impart to the water a grayish green color, giving it an unsightly appearance.

Another organism, producing a fragrance like that of violets when present in the waters in small numbers, is Mallomonas. As the numbers increase a very disagreeable fishy odor and flavor is imparted to the water, particularly when the dead bodies of the individuals are undergoing disintegration.

*Euglena sanguinea* (Fig. 7) develops but rarely in reservoirs, being usually confined to ponds and feeble streams. It gives to the water a pinkish or sometimes a deep red appearance, and when disintegrating, a strong fishy odor and taste.

The method now in use for the elimination of water-polluting protozoa is the copper sulphate method. This consists in filling a coarse bag with copper sulphate crystals (the ordinary blue vitrol crystal of commerce being usually employed), and towing this in the water behind the stern of a boat back and forth across the reservoir until the chemical is dissolved. Most of the troublesome smaller flagellates succumb to even a slight trace of copper sulphate in the water. Thus *Uroglena* is killed by four-tenths of a pound of crystals in a million gallons of water, and a still less quantity (three-tenths per million) suffices to kill *Synura* and *Cryptomonas*. Probably most of the smaller protozoan forms are killed by half a pound of copper sulphate per million gallons of water.

The accompanying cuts, which we also copy from the *Scientific American,* show a number of lowly forms of life which are sometimes found in water, especially in the hot season of the year.



1. Single individual from a *Uroglena* colony, beside a portion of human hair (500). 2. A complete *Uroglena* colony. (150). 3. Single *Uroglena* individual (1500). 4. *Glenodinium pulvisculus* (400). 5. *Synura uvella* colony (165). 6. Single individual from *Synura uvella* colony (750). 7. *Euglena sanguinea* (375). 8. *Cryptomonas ovata* (375). 9. *Dinobryon sertularia* (560). 10. *Mallomonas sp.* (1300). 11. *Bursaria truncatella* (75). 12. *Didinium nasutum* (375). 13. *Dileptus gigas* (200). 14. *Peridinium tabulatum* (375). 15. *Euglena haematodes* (350).
Some of the microscopic creatures that cause the offensive odors noted in water of questionable origin. The figure in parenthesis after each caption gives the magnification of the corresponding drawing.

# The Almond

The almond is one of the most ancient of human foods. Its use is referred to in Genesis 43:11, where we are told that Jacob commissioned his sons to carry a present down to Egypt to their unrecognized brother Joseph. The present consisted, among other things, of honey, myrrh, and "almonds."

The almond has been cultivated for thousands of years in the Orient, and for some hundreds of years it has been grown in a desultory way in some parts of Europe; but it is only within the last few years that this choicest of Nature's tree products has attained perfection through cultivation in that garden spot of the world—California.

Assisted by agents of the Department of Agriculture, the nut growers of California have overcome various obstacles which they have found opposing their industry, some of which seemed almost insurmountable, and are now every year producing an increased quantity of the finest almonds in the world. Last year the crop yield was fully twice that of the year before.

The enterprising spirit which is now manifested by almond growers will no doubt continue to increase the size of the annual crop until the almond comes to be one of the recognized food staples of the country.

# Self-Poisoning as the Cause of Disease

ALEXANDER BRYCE, M. D.
Birmingham, England

There can now be no possible shadow of doubt regarding the truth of the doctrine of autointoxication. To the readers of this journal, fortified as they are by the excellent arguments and unique experience of the editor, this proposition is a self-evident truth requiring no justification. But even they must be aware of the fact that, although convinced from his earlier reflective days that the great majority of the ailments of mankind were due to unnatural habits of feeding, he mortgaged all his leisure time and spent many laborious days as well as sleepless nights, in amassing scientific knowledge to enable him to demonstrate the truth of his convictions.

Fortunately he has lived to see not only the triumphs of his views and the vindication of his practice but to range on his side one after another of the greatest scientific and research scholars in the world. It will be my privilege for the next month or two to try to present the case for the autointoxication in these pages, and for this purpose I will make reference not only to the scientific views of experts but also to the experience gained by putting the doctrine into practice.

In the course of this investigation it will be necessary to introduce some technical terms, but so far as is possible, explanation will be given of these in the simplest language possible.

## Definition of Autointoxication

We shall begin therefore by defining autointoxication as poisoning by substances generated within the body. This definition is for our purpose far too vague as well as too comprehensive, for it includes many conditions quite outside our immediate province. For example, it would include all the infectious diseases such as measles, scarlet fever, and so forth; because, although these diseases are due to the onslaught of microbes introduced from without, the symptoms are a direct result of the production of toxins found during the growth and development of the germs within the body.

Then again it is possible for autointoxication to arise from the absorption of poisons which are generated in various parts of the body from the establishment of disease in some specific portions thereof.

For instance, an abscess may grow in the kidney or lungs or elsewhere, or a cancerous deposit somewhere may proceed to ulcerate; and from any of these, poisons may be absorbed endangering the life of the host.

But in these examples we have mentioned all the microbes have been introduced from without and are actually foreigners on the soil. They have no relation at all to the form of autointoxication which is the subject of our thesis, because it is produced by microbes which are natives or at least denizens of the region in which they form their poisons.

Several terms have been proposed to describe the special form of autointoxication, such as alimentary intoxication, gastro-intestinal autointoxication and intestinal toxemia, and probably the last-mentioned is the most satisfactory; because in the first place, it limits the scope of our inquiry to the situation where most of the trouble arises, namely, the intestinal portions of the alimentary canal, and in the second place, it excludes very many conditions which would confuse the issue.

## Food Poisoning

For instance, in Great Britain during this last winter a great many cases of disease with unusual symptoms occurred which suggested that they might be due to some form of food poisoning, and much attention has been given to this extremely interesting subject. For poisonings may arise from the indigestion of most articles of diet and may originate in various ways.

We are all familiar with the suggestion that metallic poisoning—generally lead or tin—may arise from the action of acid juices upon the metal of the cans in which various foods are enclosed. But in reality this is not a common condition today, as the manufacture of tinned goods for canning purposes is now almost a fine art, and in any case has been brought to a high state of perfection. It is more common to find poisoning arising from the flesh of animals that have been fed upon plants, harmless to themselves but poisonous to man; e. g., the flesh of turkeys which have eaten deadly nightshade leaves has caused belladonna poisoning, while grouse and hares have been rendered poisonous through eating laurel leaves.

Eating the flesh of animals suffering from an infectious disease, e. g., tuberculosis, is by no means a safe procedure, as the germs of tubercle are thereby easily transmitted.

The food may be contaminated with germs gaining admission from infected water, e. g., typhoid bacilli in oysters and milk, or even with animal parasites and their ova; certain organs of fishes are normally poisonous and others become poisonous during the spawning season.

## Deficiency Diseases

Food lacking in vitamins is now known to produce what are called the deficiency diseases. Even when all the alimentary principles are supplied in more than abundance to provide for tissue growth and repair and the production of energy, disease will arise unless those food accessory factors are included. Whilst not actually building stones, they appear to be the cement binding them together. They are products of the plant world, and it is on plants that all animals ultimately live. Three vitamins have been recognized: Water-soluble B in the germ and outer husk of grains, the lack of which in rice is the cause of beri beri. Fat-soluble A, to be found in all animal fats, except lard, and derived originally from the green parts of plants, is necessary for growth in the young, and deprivation of this is the essential cause of rickets. Water-soluble C, found in fresh fruits and vegetables, is antiscorbutic. The absence of vitamins appears to present a set of symptoms remarkably similar to those of toxemia.

Poisonous fungi are rarely found in grain. Most fungi, even some supposed to be edible are themselves poisonous. The pea family has some relatives which when eaten induce disease.

## Intestinal Toxemia

But the autointoxication which is of most interest to us is that which owes its origin neither to food contaminated before it is swallowed, nor putrefying because of its content of noxious germs, but that which arises from the digestion of food by the bacteria normally present in the digestive tube. This we have agreed to call intestinal toxemia.

It is a very remarkable fact that besides the digestion which takes place in the mouth, stomach and bowels as the result of the outpouring of digestive juices, with their appropriate enzymes or ferments, a perfectly analogous process is going on either at the same time or subsequent to the completion of the enzymatic digestion by means of microbes which are the natural denizens of the intestinal canal. The conversion of starch into sugar, the emulsification of fats, the transformation of albumen into peptones, albumoses and amino-acids, is the result not only of ferment action but also of living germs in the intestinal canal.

This is not an artificial but a natural process and should therefore only be attended by a wholesome beneficial action so far as the human body is concerned. Doubtless it was for this reason that scientists so long stoutly maintained the attitude that nothing but good results could accrue from the natural processes taking place in this best of all possible digestive canals. The microbes were there; hence they were not only useful and indispensable, but could by no possible combination of circumstances be anything but harmless.

But a vast mass of facts has been accumulated which demonstrate that however harmless they may be when kept in their proper place they can be most poisonous and productive of most harmful consequences when allowed to run riot at their own sweet will. Scientists do not now deny the possibility of harmful consequences. They vie with each other in their efforts to determine the nature of these evil results and trace them to their proper causes, and in this they may be regarded as having divided themselves into two schools. One of these schools supports the contention that the disastrous effects in the body are due to absorption of the toxins and poisons formed by the bacteria either during their life or after death, whilst the other subscribes to the view that the germs themselves are absorbed into the blood and are directly responsible for the resultant damage.

The position now is not that the scientists cannot find a cause for the autotoxemia, but that there is such a multitudinous number of causes that they have extreme difficulty in allocating any particular damage to its appropriate source. But they are strong on the scent and their quest will be successful in time.

## Germs Are Thieves and Murderers

Meanwhile, so far as our bodies are concerned we are living in the midst of a gang of thieves and murderers, and our duty clearly is to find some means of expelling the whole outfit rather than wait to be plundered daily and finally murdered, because we have not sufficient evidence to fix the whole blame upon one notorious miscreant or set of criminals. You will always find thieves and robbers wherever the temptation is strong enough. Therefore, in the investigation we have undertaken we must see how it is possible to alter all the conditions and banish the temptation.

In a well-governed community where law and order are respected we find all sorts of hindrances placed in the way of possible evil doers and all sorts of incentives meant to encourage the well doers. The imperfections of human nature are so notorious that it could not well be otherwise, and it is fair to say that in the main this is the secret of righteousness both in the physical and moral spheres.

When we have erred, it is essential that we should retrace our steps along the paths of physiological rectitude and put into practice all the known laws of life and health. We must cease to do evil and learn to do well.

Hence, in our quest after the harmful consequences of harboring malevolent germs in our body we must find the best means of encouraging the growth of friendly or helpful germs, and so limiting or completely annulling the damage produced by putrefactive micro-organisms.

Every now and again in the newspapers we read that the authorities suspect the existence of some secret society of thieves or gang of robbers whose ramifications have not yet been discovered. We will find an analogous state of affairs in connection with the microbes in the human body, the nature and movements of some of them being well known, whereas the products of others are only surmised.

Pursuing our simile still further, we know that the leader of a gang of thieves is usually an expert at his job and may be a specialist at that. He may therefore not only perform some highly skilled duty himself but be able to select one or more of his compatriots to aid him in his enterprise. A similar law applies to the world of germs, where we find special disease-producing or pathogenic microbes, some of which combine with others or live together in close association with them—a state of affairs termed symbiosis,—whilst others do their work and do it well, all on their own.

## Are Germs Necessary?

In studying intestinal toxemia we must discriminate carefully between putrefaction which takes place within the body and that which takes place in the food before it is eaten.

Then again it is important to remember that the presence of bacteria in the intestinal canal is necessary for some animals and not for others. For instance, guinea pigs thrive and grow perfectly well on a sterile diet, whereas chickens refuse to do so. On the other hand, chickens thrive if the sterile grain is mixed with a certain amount of food excrement.

Toxins or poisonous substances may arise in the alimentary canal either from foodstuffs or from secretions and excretions of the body that enter the stomach or bowels, and they may, as we have seen, be formed either by the digestive ferments or bacteria. The number of toxins known is already enormous, and it is quite certain all of them have not yet been isolated.

## The Digestive Juices Form Poisons

The constituents of the digestive secretions themselves are not above suspicion, for the pepsin of gastric juice and the trypsin of pancreatic juice have been found to be toxic when injected into the blood. This was abundantly demonstrated in the trypsin treatment for cancer so much in vogue ten or twelve years ago. In a case which I had the privilege of watching, each injection was followed by delirium and raving, and ultimately to save her sanity the treatment had to be stopped. In health, however, it is very rare that they pass through the bowel wall in sufficient quantity to cause any trouble, as the blood is capable of inhibiting the action of enzymes.

Then again, the bile and probably the intestinal juice contain waste matters which, at any rate in intestinal stasis, may be reabsorbed into the blood. The bile prevents the growth of many harmful bacteria, although it does not actually destroy them; but it also increases the toxicity of bacterial poisons which have already been produced. Bile is the medium for the excretion of the body's alkaline waste matters, and is estimated to be six times more poisonous than urine, the medium for the expulsion of the acid waste matters of the body. Bile salts are toxic and have a distinctive effect upon the blood, but the liver for the most part picks them up and excretes them again. Jaundice is frequently accompanied by evidences of considerable putrefaction. The pigments of the bile are transformed into urobilinogen, which is abosrbed and excreted again in the urine as urobilin.

## The Dyspeptic Is Full of Poisons

As might be expected from the multitudinous symptoms of the dyspeptic, inefficiently digested food is full of toxins, whereas the products of perfect or complete digestion are practically harmless. Proteoses and peptones which are formed from proteins in the early stages of gastric digestion, can be absorbed into the circulation through an ulcerated or inflamed gastro-intestinal tract. The result is decidedly poisonous, although research has not yet established the fact that the poisonous effect is not due to some associated toxins. In any case, they have been demonstrated to have a lymphagogic effect, i. e., cause an increased production of lymph, to inhibit the coagulation of the blood, to cause a marked febrile reaction, and finally to kill the dogs which have been experimented upon. Locally they produce a mild inflammation followed by connective tissue formation, i. e., the production of a scar or cicatrix in the soft parts.

Deliberate injection into the blood causes a distinct fall in the blood pressure. One does not wonder at the lethargic, poisoned appearance of the dyspeptic, his depression of spirits, his despair, introspection and hypochondria, and finally his descent into the grip of the demon of neurasthenia.

## The Colon a Breeding Ground for Germs

Already we have obtained a sufficient amount of evidence to prove the existence of toxemia by absorption from the gastro-intestinal canal without deviating far from the normal, but this evidence is enormously enhanced when we pursue our investigation further down the alimentary canal to the colon. Here we find that practically one-third of the total weight of solids of normal feces may consist of bacteria. Strassburger and other authorities have estimated that 128,000,000,000,000 bacteria are produced in the intestinal tract every twenty hours, many of which produce extremely virulent poisons. Probably 99% of the bacteria excreted in the feces are dead, but they are none the less dangerous on this account; for Distaso declares that the chief sources of the toxins from which the body suffers are not the toxins set free during the life of the micro-organisms, but rather the endo-toxins (those within their bodies) liberated after death.

The bacteria of the intestine may be divided into the aërobic saccharolytes which feed upon the fats, starches, sugar, and dextrin and the anaërobic proteolytes which feed upon albuminous substances. The activities of the former produce acids (lactic, acetic, succine, butyric, etc.) which inhibit the operation of the latter so that internecine warfare is constantly taking place for the upper hand.

Despite the alkaline secretion of the small intestine its reaction is acid, owing to the production of the organic acids in the manner just mentioned, and hence little opportunity is given for the triumph of the proteolytes. When, however, any interference with the absorptive capacity arises, or stasis takes place, then putrefaction is apt to occur. Excessive consumption of highly nitrogenous foods like meat, eggs, cheese, etc., especially if not fresh, encourages the anaerobes, whereas careful mastication of abundant starchy foods with the swallowing of air coincident with this operation, favors the aërobic saccharolytes.

## The Colon Full of Toxins

The large intestine, however, is the seat of election for the production of toxins, mainly owing to the fact that it is prone to inactivity and atonicity from our too sedentary existence. From the structure of the colon, the movements of which in the average civilized man are decidedly slow, it is apparent that it was meant to deal with a very different dietary from that to which he is accustomed today—one containing much bulk in the shape of cellulose. The structure indicates that a certain amount of delay was necessary, for even the antiperistaltic wave is meant to encourage this delay, so that bacteria and ferments (cytases) may have time to dissolve the cellulose—not to obtain any nutriment from it as in the lower animals, but to enable it to act as an irritating form of ballast.

So long as there is a plentiful supply of cellulose and carbohydrates, a sufficiency of acids will be produced by the saccharolytic bacteria to prevent the formation of an excessive quantityof putrefactive toxins, but when an excessive quantity of protein food is consumed, the resulting toxins produced make it essential for other forms of defense to be brought into operation.

## The Colon on Its Defense

The chief means of defense possessed by the colon is its own mucous membrane. This exercises its protective function not only by its epithelial cells and leucocytes, but also in the outflow of mucus which hinders the absorption of poisons by preventing their contact with the living tissues. In addition to its lubricating power, this is also an important function of liquid paraffin B. P.—the absorption of toxins—thereby retaining them in the alimentary canal until they have been expelled. Examination of a stool evacuated by means of liquid paraffin will frequently reveal the oil deeply stained with these excreta. So long as the intestinal mucous membrane is intact, little trouble need be apprehended from the ever-present toxins; but when inflamed, as in some forms of colitis, or congested and abraded by the constant use of purgatives and laxative mineral waters, its defensive powers are crippled and the doors are opened wide for the entrance both of harmful bacteria and toxins. This is the explanation of the frightful exhaustion and depression experienced by many people after a much-delayed intestinal evacuation, either with or without the use of purgative medicine. It also explains the urticarial rash which often appears on the skin all over the body after an intestinal douche even of pure water.

## Germs in the Blood

Having passed through the bowel wall and entered the blood, the toxins and bacteria are at once attacked by the small lymphocytes, much increased in numbers for the purpose. A relative lymphocytosis then takes place, as well as an increased supply of blood or congestion in the mucous membrane, and the bacteria are attacked and destroyed as far as possible. The toxins are neutralized to some extent by the formation of antitoxins and other protective agencies such as alexins, etc.

## The Liver a Sewage Destructor

Any toxin or bacteria that escape intact from the defensive action of the blood must next pass through the liver, which, as the largest gland in the body, possesses the power to destroy them in a very considerable degree. Many of the toxins, such as skatol, indol and phenol, are detoxicated by being combined with sulphuric or acetic acid, whilst, as will be explained more fully at a later stage, the liver forms glycuronic acid from the glycogen or sugar for special combination with these substances. Hence an ample store of glycogen is requisite and as glycogen is formed from carbohydrates, a plentiful supply of starches and sugar is thus necessary to insure effective de-toxication. A diet of fruit and vegetables has been recommended for the treatment of patients suffering from T. N. T. poisoning, because the liver can easily form glycuronic acid therefrom. Amongst the definite poisons known to be destroyed by the liver are the toxins of diphtheria and nicotine, so that a heavy smoker requires a particularly efficient liver.

(TO BE CONTINUED)

# Department of Eugenics

# The Eugenic Program

ROSWELL H. JOHNSON
Pittsburg, Pa.

Development of a eugenic movement, or the study and application of those agencies which will improve the mental or physical qualities of the human race, is the direct result of the acceptance of the doctrine of organic evolution. If the human race has attained its present status by a process of evolution, it follows that further evolution should be possible, and that the race may continue to gain in the quality of its mental and physical characters. But whereas evolution in the past seems to have been a process controlled only by the innate nature of the being and the environment to which it was subjected, civilization has greatly changed the situation. In the early stages of society, natural selection, by such means as warfare, lack of medical skill and attention, and unhygienic conditions of living, dealt promptly and harshly with the weak and incompetent. Today medical attention tends to keep the inferior alive and assists them to reproduce; society takes care of the insane, and the mental and moral incompetents, and frequently makes it possible for them to live and perpetuate their kind almost as freely as if they were normal. No one wishes that these unfortunates should be treated other than kindly, but the time has certainly come when it should be recognized that their contribution to the race is not only an expensive one, but undesirable. Therefore the need for eugenics arises from civilization, as it is also made possible by civilization.

The program of eugenics may be roughly divided into two portions: (1) an attempt to reduce the racial contribution of the least desirable part of the population, and (2) to increase the racial contribution of the superior part of the population.

The program rests upon a recognition of the inheritance of either the good or the bad qualities of mankind, according to the same laws which govern inheritance of qualities in plants or other animals. Fortunately, the study of inheritance has reached the stage that permits us to be sure of our ground here, though in regard to any particular quality in a particular individual there is often difficulty in determining the exact effect of inheritance or of training and environment. But we have plenty of good and conclusive evidence that many superior qualities as well as deficiencies are of an inheritable nature.

Since certain types of inferiority are easily recognized and give rise to considerable trouble and expense to society, and because their control can be effected rather directly and efficiently, the first part of the eugenics program has attracted most attention, and is probably looked upon by many as being practically the only aim of eugenics. Certainly the race would be greatly benefitted if this were accomplished. Few persons realize the number of deficients in the population if our own country. It is almost impossible, for various reasons, to secure full statistics regarding the number of racial degenerates. The only accurate figures are secured from the census of those who are confined or cared for in the institutions of the country, and such figures include only a portion of the persons who should be included. From the various census figures which are now available there are shown to be about 600,000 blind, deaf, insane, feeble-minded, pauper and criminal persons confined in institutions of the United States. Care must be taken in the interpretation of these figures, for the condition of all these persons cannot be ascribed to congenital and hereditary defects. But a considerable number of them, especially of the insane, feeble-minded, paupers and criminal, are the result of a defective inheritance. It is also true that only a minor proportion of those so afflicted are confined in institutions, a far larger number being cared for by their families, or managing some kind of independent existence. To these persons must be added many epileptics, prostitutes, beggars, and others who cannot be reached by any census enumeration, but who are mentally defective to a greater or less degree. When it is remembered that a very large number of persons who spring from defective families may not themselves show evidence of mental defects, but carry such in a latent condition, so that the marriage of two such apparently normal individuals may result in the propagation of defective children, it is apparent that the total number of undesirable possible parents is very large. It has been estimated frequently that the United States would be better off without the racial contribution of at least 10% of its people. Any attempt to control the reproduction of such a number of the citizens of this country would be too tremendous an undertaking to be practicable, but the estimates do show the necessity of some program to diminish the birth-rate of at least the worst part of the defectives.

The histories of defective families, several of which have been carefully studied, demonstrate that they are not only a continuing nuisance and moral danger to their communities, but also that they are endured at a very large monetary cost to society, which will be likely to increase rather than diminish as long as they are not placed under greater restraint than they have been under in the past.

"From one lazy vagabond, called in the literature 'Juke,' born in 1720, whose two sons married five degenerate sisters, six generations numbering about 1,200 persons of every grade of idleness, viciousness, lewdness, pauperism, disease, idiocy, insanity and criminality were traced. Of the total seven generations, 300 died in infancy; 310 were professional paupers, kept in the almhouse a total of 2,300 years; 440 were physically wrecked by their own 'diseased wickedness'; more than half the women fell into prostitution; 130 were convicted criminals; 60 were thieves; 7 were murderers; only 20 learned a trade, 10 of these in State prison; and all at a State cost of over $1,250,000." Since the foregoing was written, the family has reached its ninth generation, and has been studied still more exhaustively. They still show the same feeble-minded indolence, licentiousness and dishonesty, even when not handicapped by the associations of their bad family name and despite the fact of being surrounded by better social conditions. They now are scattered widely over the country, and it is significant in this connection that out of approximately 600 living Jukes who are feeble-minded or epileptic, only three were in custodial care at the time the study was made. If the clan could have been prevented from propagation by proper means, the nation would thereby have been saved at least $2,500,000.

Attention has been entirely directed in the past, and is still largely so, toward improving the condition of such persons, in the hope that under better social conditions the character of the individuals would be bettered. Modern work in heredity has shown that such hopes are based on a misconception of the facts of inheritance, and that the measures undertaken for improvement one-half are doomed to be largely futile. What is needed is a separation of the hereditarily defective from the normal, and control of the reproduction of the defective, with the aim that their race will die out. Such a program is practical, and is favored by the tendencies of our times. We are constantly securing more knowledge regarding the inheritance of certain types of defectiveness and we are also developing a greater favor in caring for the defective persons in institutions where they will be under humane care, but will not be permitted to reproduce their kind.

In this connection it is necessary for us to recognize that many measures which are commonly called "eugenic" are not such at all, since they are designed to protect the community from infectious disease, to prolong life, or to prevent infant mortality, and not to prevent the birth of those of defective family stock. Both programs are worthy, but they should not be confused with each other, because the methods which will apply to one will not fit the other.

If it seems to some that the proposal of eugenics to limit the reproduction of defectives is an interference with the rights of such individuals, we should answer that the welfare of the race as a whole, rather than of defective members of the race, should be sought. And the right of the individual to enjoyment of life and its opportunities does not necessarily include the right to leave a long line of descendants a defective inheritance which will certainly not increase the happiness either of themselves or of the communities of which they will be a part.

But while it is the desire of the eugenist that fewer defective persons shall be born in the future,—and the average quality of the race will be greatly improved if this can be accomplished,—nevertheless this part of the eugenic program is negative rather than positive. It is far more desirable that the number and proportion of superior persons in the race shall be increased. As civilization develops, more and stronger leaders are desirable, in order that the improvement of our race and its activities may continue. Through the activities of its leaders the entire nation is made happier and more useful. Just as defectiveness has been found to run through certain large families, other families have been found to be possessed of superior qualities, and have had a large part in the constructive activities of nations. There can be no question that more such families are needed. There being numerous indirect methods of securing a selective breeding in the human race, the constructive program of increasing the superior part of our population is a feasible and more important program of reducing the racial contribution of the defective.

This constructive program naturally divides itself in two parts, (1) to secure a sufficient number of marriages of the superiors, and (2) to secure an adequate birth-rate from these marriages.

Securing an increased number of marriages of superior men and women involves the idea of selective mating, in which certain standards shall be more or less consciously observed in choosing partners. One's first impression is apt to be that this is impossible, since love is proverbially blind and impatient of all restraints. But a more careful consideration discovers that there are and always have been restraints regarding marriages which are decidedly artificial, yet have been largely observed. The taboo of savage tribes which sets up a barrier to marriage between persons who in our own civilization would be free to marry is common, and is observed most scrupulously. In our own society the artificial restraints to random mating are exceedingly numerous. Differences of education, inequality of wealth, social standing of families, religious sects, are purely artificial but effective restraints to free mating. Without at all denying that love finds a way and laughs at locksmiths, it nevertheless seems true that it is far more untrammeled in romantic literature than it is in real life. Why should not a social factor which already exists, pride of family, be used for the best interests of the race by causing it to be based on recognition of the truly superior social qualities of the family? There is no reason why eugenic ideals should not become a part of the unwritten laws of the race, nor why marriage should not be largely influenced by them. Of course this can only happen when many intelligent people have become convinced of the ethical value of eugenics, so that the eugenic ideal becomes a part of their subconscious thought. This does not mean that marriage would become freed from emotion. Marriage should be mainly a matter of emotions, but the emotions can be directed in the right channels. True quality, both physical and mental, as expressed by intelligence and talent, moral standards, reputability and honor, as well as physique, should be emphasized as against all false standards. Good ancestry should be frankly recognized not only as a social asset, but as on the whole a real eugenic asset. As regards a considerable part of our communities, one of the serious problems of eugenic mating lies in giving the young people a greater range of choice. It is significant that thoughtful people are beginning to recognize the necessity of finding some solution for this problem, and are advocating and in some places arranging for gathering places where, under the right kind of supervision, young people of both sexes can meet and get acquainted with each other. The coeducational college and the church have long been recognized as valuable agencies in bringing together young people of similar interests, and in general, of superior intelligence. It is doubtful if the organizations which tend to separate the sexes and to produce a kind of celibate community, function socially as they should.

But increasing the marriage rate of the superior is not simply a matter of social ideals; it is also dependent upon economic factors. If it is impossible for the superior members of society to marry at the usual age, or to marry at all, because of the economic difficulties in the way of supporting a family, the racial contribution of these persons will fall below that of the inferior, and the eugenic average of the race will necessarily be lowered. The influence of economic conditions on marriage and birth-rate is very conspicuous among college graduates and those who are training for professional life. College education develops tastes and aesthetic appreciation which can only be satisfied by a fairly good income. But it does not result in an immediate increase in earning capacity. The development of science and industry, and the demand of the community for proficiency, have largely increased the number of years required in school training for the professions, as well as the length of the apprentice period which follows the degree. The result is that prudent young people postpone marriage to a later age than it occurs among the less educated, with the result that the reproductive period is seriously shortened. If a population is divided into two equal parts, one of which produces a new generation every twenty-five years, and the other every thirty-three years, the first group will form two-thirds of the population at the end of a century.

If the needs of the community make a long period of training necessary for its professional men and women, then it would seem to be clear that the community should provide for this training in some way, so that those submitting to it shall not be forced to lead a more or less abnormal life, and so that the community shall not lose at least a part of the valuable racial contribution which these persons should make to the population. The semicelibacy of the professional classes means the selection out of the community in each generation of a certain proportion of the most valuable part of itself. "The promotion ot marriage in early adult life, as a part of social hygiene, must begin with a new canonization of marriage. This is equally the task of the fervent poet and the scientific thinker, whose respective labors for humanity are never at variance in essentials.... The sentiment for marriage can be deepened by a rational understanding of the passion that attracts and unites the sexes. We need an apotheosis of conjugal love as a basis for a new appreciation of marriage. Reverence for love should be fostered from the outset of the adolescent period by parents and pedagogues." And in addition, society must correct these economic conditions which tend to postpone or avert the marriages of the most superior young men and women.

The matter of the declining birth-rate of superior people has been raised so many times in recent years that it is in danger of becoming stale by repetition. It is a short-sighted and questionably sincere attitude which prompts the reply that what is wanted is quality, not quantity; that a few children given ideal care are of much greater value to the State than are many which do not receive this attention. Those who convince themselves of the truth of this statement may justify their own position to themselves, but cannot change the facts of Nature nor the result, which will be the extinction of the family lines of those who hold it. In general, unless every superior married woman bears between three and four children, this section of the race will not hold its own in numbers. The wealth of a nation is its people; moreover, some people are, as national assets, worth more than others. The goal might therefore be said to be a population adjusted in its numbers to the resources of the country, and that number of the very best quality possible. Modern society requires a great diversity of people, but the best possible representatives of each desirable kind are necessary.

As everyone knows, race suicide is proceeding more rapidly among the native whites than in any large section of the population, and it is exactly this part of the population which has in the past furnished most of the eminent men of the country. Eminent men do not appear wholly by chance. The production of eminence is largely a family affair; and in America as well as in other countries people of eminence are inter-related much more than chance would allow. It has been shown that in America it is at least a 500 to 1 bet that an eminent person will be rather closely related to some other eminent person, and will not be a sporadic appearance. Taken in connection with other factors this means that a falling off in the reproduction of the better families means a falling off in the reproduction of eminent persons which America will produce. Education alone cannot prevent this, for the strong minds get more from education than weaker ones.

Frederick S. Crom's investigation of New England geneologies, including 12,722 wives, shows a steady decline in the birth-rate of these families. He found the average number of children to be:

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|---|---|
| 1750-1799 | 6.43 |
| 1800-1849 | 4.94 |
| 1850-1869 | 3.47 |
| 1870-1879 | 2.77 |

The statistics from the educated and professional classes are even worse. It is clear that the more intelligent and well-to-do part of our population is limiting its birth-rate to an alarming degree.

The influence of economic factors on the birth-rate is important. Under modern conditions, and particularly in the professional classes, children are no longer assets, as they were on the farm in earlier days, but liabilities. Changing social customs in regard to children have increased the cost of clothing and feeding them. Medical attendance for the children is considered necessary, and rightly so, but it is becoming more costly because called upon to so much greater an extent. The difficulty of securing competent domestic help, and its cost, has a reflex effect on the family. Intelligent mothers recognize that they must give a large amount of careful attention to their children, and this cannot be given if the mother must also do all the work of the household. So, frequently the number of children will be influenced by success in obtaining servants. Perhaps more important than anything else is the increasing standard of education. The kind of family we are discussing is apt to desire a professional education for its children, an education which greatly increases the period during which the child must be supported, as well as expensive in itself. It is frequently a question whether, for some families of the superior class, "higher education" is worth all that it costs.

The effect of all these factors is to reduce the number of births in that class whose contribution to the population is the most desirable. "To effect a discriminating change in the standards of the more intelligent and better educated classes calls for a real effort on the part of all those who have the welfare of society at heart. The difficulties are great enough, and the obstacles are evident enough; it is more encouraging to look at the other side, and to see evidences that the public is awakening. The ideals of eugenics are filtering through the public mind more rapidly than some of us, a decade ago, felt justified in expecting. There is a growing recognition of the danger of bad breeding; a growing outcry against the excessive standards of luxury that are making children themselves luxuries. The number of those who call themselves eugenists, or who are in sympathy with the aims of eugenics, is increasing every year; legislators show an eager desire to pass measures that as they (too often wrongly) believe will have an eugenic result. Most colleges and universities are teaching the principles of heredity, and a great many of them add definite instruction in the principles of eugenics. Although the ultimate aim of eugenics—to raise the level of the whole human race—is perhaps as great an undertaking as the human mind can conceive, the American nation shows distinct signs of a willingness to grapple with it.

# The Galton Society for the Study of the Origin and Evolution of Man

Eugenists and all others who are interested in the scientific and historical aspects of human progress will welcome the organization of the new Galton Society. The formation of this society was suggested and initiated by Messrs. C. B. Davenport and Madison Grant on March 6, 1918. On April 2, after several previous conferences, Messrs. Davenport, Grant, Osborne, and Huntington adopted the charter and the name of the society. At the first formal meeting of the charter fellows, held in New York on April 7th, Dr. Charles B. Davenport was elected chairman and Dr. W. K. Gregory secretary.

The objects of the Galton Society are the promotion of study of racial anthropology, and the origin, migration, physical and mental characters, crossing and evolution of human races, living and extinct. By drawing in and co-ordinating much that has been done in the field of psychology, general biology, genetics, neurology and history, the members of the society hope to place anthropology upon a far broader basis than heretofore.

# Department of Physical Education

**Conducted by C. WARD CRAMPTON, M. D.**

Dean of the Normal School of Physical Education, Battle Creek, Mich.

# The Physical Training Supervisor, the Teacher, and the School Nurse

The solution of the problem of the correlation between the two school activities, School Physical Training and School Medical Inspection, is fraught with difficulties, because in almost all localities conditions differ very widely. One cannot prescribe for each diverse condition. A clear statement of standards, principles, and ideals may, however, be made so that the methods and practice in each diverse condition may have a scientific and secure foundation.

Medical School Inspection arose because schools had become notoriously bad places for children. They were unsanitary and bred disease. Medical inspectors were sent to examine the premises for unsanitary conditions and to examine the children to see if they were suffering from contagious diseases. As a rule, they came from the Board of Health, and their purpose was disease prevention. Wide-awake doctors could not see groups of children without seeing the need for service. They discovered non-contagious medical defects, such as adenoids, eye strain, enlarged tonsils, and sought ways to correct these conditions. They found inadequate ventilation and other features of bad school housekeeping and they initiated reforms. They found also that their visits were too infrequent, so they sent nurses, who cost the community less per visit and who had sufficient medical knowledge to carry out the doctor's instructions and to give a womanlike, mothering care to the application of medical science. Thus the School Doctor and the School Nurse came into being, and marked an epoch in the humanization of public school teaching.

For our future guidance. it is worth while to note that both the doctor and the nurse came into the school from the outside, to protect the community against contagious disease and to save the children from illness. Secondly, and later, they became advisory officers to the school teachers and principals, and lastly, there is a third stage, at which some schools have arrived, and that is, the adoption of the School Doctor and the School Nurse as resident members of the school family. Further, it is interesting to note that, while it was the Boards of Health that were the first to send doctors into the schools from the motive of protection for the community; in many localities, the school boards themselves saw the need for medical service, employed their own physicians and nurses, and attached them to the school corps. This changed the central controlling authority, and it made a difference in sentiment in the schoolroom itself. The teachers had a warmer regard for the school doctor coming from the school authorities, and more freely co-operated with him, but they lost that salutary fear (if there is such a thing as salutary fear) which they had for the doctor from the Board of Health who was clad with legal police authority. We see the doctor and the nurse as school consultants in matters of health of the school children and with a theoretical function relative to school sanitation.

Physical Training is one of the oldest of school subjects. The Athenian boy followed the Persian youth in athletics. The Roman child was physically trained for war, and even in the Middle Ages, when there were no schools for the nobleman's sons, when reading and writing were signs of servility, Physical Training was the gentlemanly, knightly culture; fighting, horsemanship and courtly deportment were the marks of a gentleman, and in these things a gentleman's sons were schooled. With the return of reason, Froebel, Rosseau, and Pestolozzi based their program on play and physical exercise, and it was not until their disciples, the pedagogues of the Victorian Age, which still live in many a fair town of the United States, had become enamored of the textbook and had bound their own horizon and the child's whole existence with a set of neatly folded book covers, that Physical Training fell from its high estate as the fundamental subject of the school. Before this, it was primarily the teachers' business to play with their children and teach them exercises. At the present day, although school teachers are frequently taught nothing but books, large numbers of normal schools are taking up health and exercise topics.

Physical Training has two purposes, health and neuro-muscular education. On its health side, it makes use of exercises which stimulate the physiological processes and are called physiological or hygienic exercises. It uses others for the purpose of correcting postural defects and others still for the purpose of giving healthful employment to the leisure hours. Physical Training has joined hands with the children, for while it scientifically and consciously devises means for health-giving scientific exercise, the children themselves unscientifically and naturally tutored only by hereditary instinct and their older mates have developed a curriculum of health-giving exercises which they like to do and which are called play. Science and instinct have come together to make the children vigorous and strong. Athletics grow out of the natural desire for supremacy in fields that were once vital for survival, such as running, jumping, climbing, throwing, and the like.

But Physical Training teachers in the pursuit of health for their pupils did not stop with exercise alone, but added fresh air, bathing, attention to the diet, first aid in emergency, etc. In some cases, this health curriculum became very highly specialized, and was called "training for athletics." By and large, however, it developed into a system of instruction in Hygiene, and in making this progress, it met with other scientific features, which in this country were primarily interested in fighting the evils of alcohol and tobacco, and joined with others of humanitarian or social or medical stripe in developing the teaching of Hygiene. In this, they commenced to meet physicians and nurses who also were interested in Hygiene, and who had come into the school systems and had aided the school authorities in the production of the course of study in health. So we have the principals and teachers receiving from many sources interest and aid in developing a system of health instruction, and two of these sources were Medical School Inspectors and Physical Training teachers. In some localities, the Physical Training Director became the health officer of the school board and directed not only the physical exercise, play, and athletics, but devised and put through a system of health instruction as well. In other localities we find school physicians giving the impulse

which has resulted in instruction in Hygiene.

Instruction in Hygiene is not a simple matter of giving lessons from a book. This is the old style of instruction, now happily on its way to the past. The teacher today has been taught that health is far less a matter of information than it is the formation of habits and instruction calculated to develop the habits of health as the basis of education in Hygiene. In New York City I put into effect a plan of regulating the whole life of the child. This was called the daily hygienic routine, and it was put into the hands of the class room teacher. Further, the teacher was put in charge of the hygienic condition of the class room, and instruction as regards seating, lighting, ventilating, orderliness and cleanliness of the class room and other kindred subjects was given her. Furthermore, she was given the duty of the daily morning hygienic inspection. New York City, I believe, was the first organized school system to adopt both the daily routine and the daily morning hygienic inspection.

The latter is particularly germane to our subject in that it is one of a series of health inspections that are given to the pupils, for they must be inspected and examined by the doctor and nurse as well, and it is particularly important that the nature of the daily inspection should be clearly set forth, for its principles have been misunderstood and misapplied throughout the United States without the caution and circumspection which accompanied its first introduction. The Daily Morning Hygienic Inspection has four principal purposes, which are given in the New York City Syllabus on Hygiene:

"1. *To inculcate habits of personal cleanliness by inspection of each pupil.*

By arousing each pupil's enthusiastic interest and pride in his own personal appearance and by stimulating a desire to attain a perfect class record in cleanliness, neatness and good health, the teacher will obtain better results than by emphasizing the deficiencies found.

2. *To discover early signs of illness and to prevent contagion.*

3. *To establish co-operation between the home and the school.*

4. *To establish a close co-operation between the school medical inspection service and the class teacher* for the benefit of the health of the children."

In general, the Daily Morning Inspection corresponds closely to the inspection made by the wise and solicitous mother who looks over her boy, straightens out his necktie, pats him on the back and sends him off to school with a parting word to the general effect that if he acts as well as he looks, he will be a credit to the family. The teacher stimulates the desire for order and cleanliness of person and clothing by the very real method of demanding it and punishing its lack. The second field of great usefulness is the notation of signs of illness for the purpose of preventing disease. This is exceedingly important, since any school system can save from 500 to 600 days' absence per 1,000 pupils by the simple adoption of the Daily Morning Hygienic Inspection and by backing it up with the instruction of the teacher in the discovery of signs of illness from contagious disease in some simple fashion that any ordinary person can understand. It is not expected that the teacher shall be a physician, nor yet a nurse, but she certainly can and should be able to observe the following symptoms:

"Any deviation from the normal in a previously healthy child should aways be regarded with suspicion.

*General Symptoms—*

The beginning of most children's diseases show one or more of the following symptoms. Depending upon the severity of the symptoms, the pupil should be separated from others and watched, sent to the doctor or nurse, or sent home to the parents with a written explanation.

Disinclination to study or play.
General Malaise.
Drowsiness.
Cheeks flushed or pallid.
Fever.
Chills.
Vomiting.

*Special Symptoms—*

*Cough.* Children who sneeze or cough should be taken from their regular seats and isolated or excluded, if necessary. This is most important, for many diseases are spread by sneezing and coughing.

Loss of Weight (Imperfect Nutrition).
Pallor.
Shortness of Breath.
Frequent Requests to Leave the Room.
Restlessness.

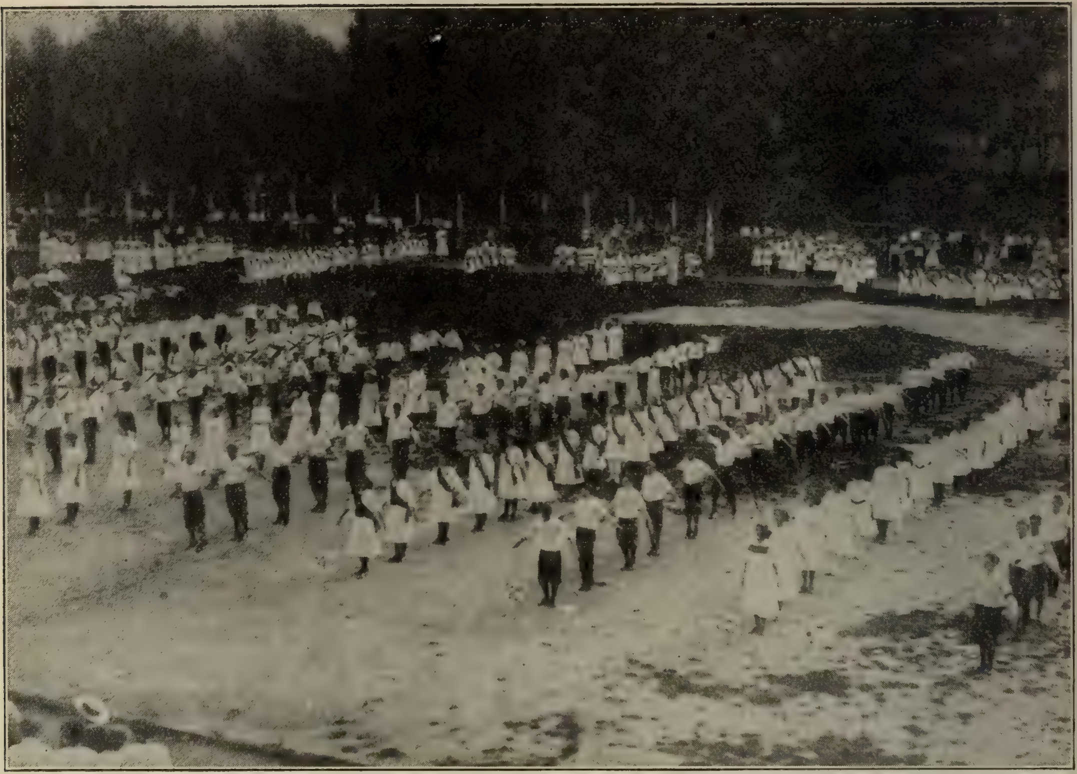
*Local Symptoms—*

Pain.
Eruptions, Rashes, Itching, Irritation of the Skin.

Red Eyes (with or without discharge).
Especially if accompanied by any of the following symptoms of defective vision: Scowling, squinting, headaches, holding reading matter at an improper distance from the eyes.
Running Ears and Deafness.
Mouth Breathing.
Sore Throat.
Swelling in the Neck. Particularly if in the region of the ear."

This system of inspection had been in operation in 30 per cent of the schools of New York City for four years and in all of them for two years when the great epidemic of influenza reached the city; and after the most serious conferences had been held, taking into consideration the extreme importance of the decision, it was agreed that the schools should remain open during the epidemic, expressly for the purpose of discovering as soon as possible cases of influenza among the children and getting them under treatment, for it was realized that there were 22,000 teachers trained and alert to observe the first approach of disease. And New York City is proud of its unique record in this respect, for undoubtedly many, many deaths were prevented. Greater confidence was given to those who decided this matter by the fact that the teachers had been trained previously for over five years to fight against coughing and sneezing in the class room, and this was begun at a time when "droplet infection" was still a theory as yet not fully understood.

This huge sanitary effort was put into operation under the direction of the Department of Physical Training, which in this city had developed, in addition to the Department of Physical Exercise and Athletics, a division of Educational Hygiene. Under other conditions and in another city,



it is conceivable that it may equally well have been put into operation by a vigilant Board of Health. This might have been done in New York City if the Board of Health had not been aware of the fact that the Department of Physical Education was already developing its own methods of Hygienic Inspection and the instruction of school teachers in ways of prevention of school room infection. The Department of Health was made aware of these facts by the Director of Physical Training, who submitted all hygiene and health instruction plans to the Department of Health for their advice and assistance.

Realizing that the conditions would probably differ in each class room and certainly appreciating the fact that every school teacher is quite properly a law unto herself, the Department laid down a typical method of conducting the inspection as follows:

> "The Daily Morning Hygienic Inspection must be efficient in realizing the purposes of inspection, but the principal is empowered to adapt it to the neighborhood needs."

It is clear that so long as the teacher is instructed as to her duties thoroughly and completely, and is adequately and *inspiringly* supervised in the discharge of them, it is comparatively unimportant who instructs and who supervises her. It is, however, of paramount importance that the instruction shall be competent and that the supervision shall be inspiring, authoritative, and effective.

The instruction of the teacher, to be authentic, must come from competent medical and pedagogical authorities. To be authoritative, it must come from the source from which the teacher receives her salary, and this must be the superintendent of schools. If the instructions are initiated by the Department of Health, they must go through the hands of the superintendent of schools. If they arise from the Department of Education, they must be submitted to the Department of Health for approval. Similarly, the supervision, inspection, and following-up of the teachers must be medi-

cally and pedagogically authentic and administratively authoritative.

It is obvious that the principal of the school cannot be an expert in all of the various matters that must be taught in the school room, and therefore, there are supervisors who come to aid the class-room teacher in her instruction. There are also special teachers of Physical Training, who teach the subject when it is so young and new in the schools that the teachers themselves have not been instructed in it. The special teacher plan is, as a rule, the first step in introducing a new subject, and usually followed by incomplete and finally by complete supervision. There are other supervisors available for the instruction of the teachers in health matters, and these are the visiting doctor and nurse; and here there is an opportunity for endless trouble. The teacher, as a rule, thinks one supervisor is enough, but when given two or three, the situation is frequently entirely bad. The only solution lies in a division of labor, clear-cut and authoritative, as determined by the superintendent of schools.

Whatever plan is adopted, it must be founded upon a clear-cut conception of the needs of the individual child and a wholehearted desire to serve him, rather than a keen interest in the professional advancement of the particular bureau to which the supervisor belongs. It was the writer's misfortune to fall heir to one side of a bitter fight between a Physical Training Department and a Bureau of Child Hygiene under a Department of Health, and it may be admitted that he conducted his side of the fight for a year or more with vigor, until realizing that bureaucratic controversities saved no lives, he suggested a series of inter-bureau conferences to replace inter-bureau contests. The plan was eagerly accepted by the Commissioner of Health, and a period of co-operation was begun.

This method is the best recommendation that can be made from the point of cooperation between Physical Training and

Medical School Inspection. It is essential that there shall be the closest possible integration of authority, beginning at the top and going down to as near the child as circumstances will permit. The Medical School Inspection and Physical Training should be under one head, either the State or city commissioner of education. If possible, they should be combined into one bureau, with a Director of Educational Hygiene or a Director of Physical Education in charge. He should have assistant directors, who should have charge of all the activities of his department, from athletics to adenoids, and under him also should be the supervisors, who shall have similar fields. These should be the advisors to the principals and local superintendents. These should be the instructors of the teachers. Under their direction should operate the local medical school inspector and the local nurse.

The key to the present situation is the Health Education Supervisor, the Health Education or Physical Education local supervisor, who may be attached to the local organization in the city or to the whole county in the loosely-settled rural community. The nearest approach to adequate training for this purpose is now found in schools of physical education in our universities, in State normal schools, and in some cases, in private normal schools. In these, there is beginning to be taught Health Hygiene, School Health Problems, Physical Diagnosis of minor and major illnesses, Community Welfare Organization and Activities, as well as Play, Athletics, and School Room Gymnastics. The well-trained Physical Educator has today an all-round skill in the supervision of the whole gamut of school health activities.

It is necessary for the Physical Education Supervisor to receive instruction and direction from authoritative sources. She will need pedagogical and medical conferences, for she must deal with the operation of the local physician and nurse. Undoubtedly there should be supervising physicians who should control the methods of school medical inspection, and there should be supervising nurses who should bear the same relation to the local nurse, but these should align their activities strictly to the needs of the teaching plan. Co-operation is the keynote. Good will, the realization of the importance of the task; that it is bigger than any one man, woman, or organization; a thorough and complete sense of the apostolic nature of the calling; a deep and abiding missionary spirit—these are the essentials of co-operative success in this field. There is no place for bureaucracy or individualism, and any one who has given his life to the health of the children should not divide his allegiance between the children and the bureau for which he stands. To deal with the health of the children is a task which should be realized to be sacred, a charge not to be undertaken lightly. There is no higher reward here or hereafter than a sense of having done good to the children, but for those who have placed self-interest and advancement or petty pride of position before their sacred duty, there is, and most appropriately, a fate worse than the millstone and the uttermost depths of the sea.

* * *

# Mother's Vacation

### LENNA F. COOPER

Summer time is vacation time. All of the members of the family who are employed are of course planning to spend anywhere from one to four weeks in the mountains or by the seaside or, perchance, if these are too far away, by some inland lake or stream.

Mary, who works for the Government, will, of course, have her four weeks annual leave, and Johnnie, who works for a large manufacturing concern that realizes that he, too, must have some change and relaxation, will have from one to two weeks. The business world has come to realize that the efficiency of employees is largely dependent upon the vacation time, and are willing in the majority of cases to grant the vacation at the expense of the employer, in order to secure the benefits accruing from the vacation. Even father has found that he comes back to his business with renewed energy and vigor after a vacation, and that in dollars and cents it pays him to take one.

But what of mother, who earns her livelihood by working from sun to sun and whose work is never done? Prone is she to remain at home and look after things while the other members of the family go on their vacations. It is just as important that mother should "go away for a vacation" as for any other member of the family.. It is true that she might take a rest in her own home, but this is not in the truest sense a vacation. A vacation should provide rest, leisure, recreation and a change of scene and thought. It should embody some new or unusual experiences—not merely a visit where she will go on in the same routine in another's home as in her own.

Mother, of course, does not wish to go off by herself, unless an excursion can be planned with some congenial friend or relative, whereby she can be relieved entirely of the responsibilities of her family. It may be that the next best vacation would be one in which the entire family participates, in which event a camping trip may be full of new and varied experiences, permit freedom from responsibilities and provide the necessary rest and relaxation.

The tent or cottage must be equipped with the simplest and most essential furnishings. A two-burner kerosene stove, with a small portable oven, and a few aluminum or granite cooking utensils will suffice for cooking equipment. As far as possible, paper plates and cups should be used, thus doing away with the usual routine of dishwashing. The cooking should be of the simplest but at the same time must furnish an abundant supply of calories, inasmuch as exercise and open air are conducive to increased appetite. The larder should contain such supplies as can be carried in small space and which may not be easily obtainable on the trip. Flour, cornmeal, salt, sugar, rice, shortening, oatflakes and also a small supply of canned goods for emergency use, (such as canned milk and a few canned vegetables) should constitute the backbone of the lunch-kit. Let the family forage for the remainder of the food. Nearby farmers are usually willing to sell fresh milk, eggs, butter, potatoes and fresh vegetables. The chief requisite of a meal for a camping party is quantity. It must also be hearty, that is, it must contain a large number of calories. People who have never been able to eat pancakes can usually do so on a camping trip. Corncake is a filling and substantial bread for the noonday meal. Potatoes boiled in their jackets furnish a substantial dish and are easily prepared.

The work of preparing and clearing away the meals must not be left to mother alone. Indeed, mother, of all others, should be relieved of that responsibility.

By way of variation, a meal cooked in the open over a camp fire is desirable. The children will delight in bringing together the boughs and branches from which to build the fire, and father and Johnnie will enjoy digging a small trench for the firebed. When the wood has burned away, leaving a large bed of coals, corn in the husks and potatoes in the skins may be buried in the coals, and left until tender, which will take about one-half an hour for the potatoes and from fifteen minutes to one-half hour for the corn. Onions may also be nestled away in some corner of the fire. Delicious apples may be toasted by placing them on green sticks and holding over the fire. Each member of the party will enjoy toasting his own apple. If, perchance, marshmallows have been included in the box of essentials, a marshmallow roast will form the climax of an out-of-door meal.

By all means choose simple clothing. Wash dresses of khaki, gingham or percale are most appropriate. One dress suitable for traveling will be sufficient for that purpose. Loose house dresses of neat design are most desirable for ordinary wear. Overalls are most appropriate for the boys. Above all, do not forget the bathing suits. Even for those who do not swim they are a desirable part of the camping outfit, for a dip in the water is most refreshing and may be indulged in at least two or three times a day with no fear of overdoing the matter.

Be sure to let this vacation be a real vacation for mother, who, in the words of our familiar Irish song, should with the other members of the family, "Pack Up Her Troubles in Her Old Kit-Bag and Smile."

# Household Helps

**To Remove Discolorations from Aluminum**—Slight discolorations may be easily removed by cooking some acid fruit or vegetable in the vessel. Many good cleansing powders and soaps, containing a little free alkali, readily clean aluminum. Sour milk, diluted vinegar, scouring with whiting, or fine steel wool are equally effective. Any soot on the outside should be wiped off with paper instead of being washed off.

**Washing China**—A clean pan, good soap, plenty of water, and clean towels are essential to the perfect care of china. In clearing a table of soiled dishes, all glassware should be washed first, then the china that is not greasy. Well-scraped dishes should be washed in a roomy dish-pan full of fairly hot suds. Never rub soap directly on the china, since it sticks so that it is very hard to get off. After the dishes are washed with a clean cloth or mop, they should be rinsed in water a little hotter than the washing water. Care must be taken not to subject any kind of ware to sudden changes of temperature. A sudden passing from extreme hot to cold, or vice versa, soon develops chips or cracked glaze if the dish is not broken outright. Another source of cracked glaze is the piling of hot plates or saucers one on the other. Do not leave very fine china soaking in the water.

**Care of Silver**—Wash silver in hot suds made from good white soap to which a little ammonia may well have been added, and rinse in hot water. To brighten silver after having been dried with a soft towel, rub quickly over with a wash leather or a piece of Canton flannel. Silver cared for in this way will not require to be polished oftener than once or twice a year. Egg stains are removable with wet salt, or a paste of whiting and ammonia or alcohol. Black marks from certain vegetables may be erased in like manner. On the day set aside for the cleaning of silverware, look it over carefully for stains. If none are found, dip a flannel or soft brush in whiting, then in ammonia or alcohol and rub quickly, polishing with flannel or leather. If there are stains, rub hard with whiting moistened with alcohol or ammonia. Should stain remain visible, wet it quickly with oxalic acid, wash off instantly, and rub with whiting and alcohol. Oxalic acid is a poison and no trace of it must be left. In cleaning plated silver, the fact that the plating is pure silver and therefore softer than ordinary sterling should be kept in mind.

**To Clean Brass**—Regardless of the sort of brass to be cleaned, it must first be freed of all grease and dirt with strong ammonia suds. Then rub well and quickly with vinegar and salt, or oxalic acid and salt; wash immediately and polish with sweet oil. The acid must be completely removed, else the last effect will be worse than the first. The oil may be thoroughly wiped off with a dry cloth or soft leather.

Iron is well cleaned if washed with a stiff brush and ammonia suds, rinsed and dried, then oiled plentifully with sweet oil and dusted with powdered quicklime. Allow the lime to stay on a day or so, then brush off with a clean stiff brush. Polish with a soft brush and rub with cloths. To prevent rust of new iron or steel utensils, cover with fat and bake.

**Combating Kitchen Odors**—The acrid smell of burned or scorched foods is very disagreeable and at the same time very unnecessary, since the food is to be cooked and not burned. To leave unwashed pots and stew pans on the range is an unforgivable source of bad odors. As cooking vessels are emptied, they should be filled with water and left until washing time. Two pounds of washing soda dissolved in a gallon of boiling water and kept handy is very good to use with such utensils. As the vessels are emptied, pour in a little soda water and shake it well around the sides and leave until washing time.

Onions, turnips, and all the cabbage tribe which "smell to heaven" may have their odor, due to essential volatile oils, toned down by a little care in cooking. If the vegetables are prepared a few hours before they are wanted and left to soak in cold salt water, rinsed and put over the fire in fresh cold water, they throw off this oil largely in the form of a scum. Another preventive is a very hard, stale bread crust covering for the vegetables just as they come to a boil. Let it stay in for several minutes. Then remove. This will prevent the oil vaporizing; however, it is a waste of bread. There are many varieties of range-hoods which carry off the disagreeable odors in the kitchen. Minus a hood, offensive odors may be dispelled by the burning of a little straw, or a newspaper, in an open fireplace. It behooves a good housekeeper of a small house to work against the entire house being permeated with the odor of cooking food. Entrances to the remainder of the house from the kitchen may at least be kept closed.

**To Clean Papered Walls**—A mop of perfectly clean cheese cloth fastened to a long, light handle is the best thing for keeping a papered wall clean. In a locality where there is much smoke and dust, papered walls should be gone over at least once a month. Do not allow the walls to go long periods of time without cleaning. If this is done and a mop of cloth is eventually used to clean them, the result is often unsatisfactory. A thorough cleaning may be given such walls with a mixture of cornstarch, whiting, and powdered Fuller's earth in equal parts. Rub the mixture on the walls in long straight strokes with the mop. Re-cover the mop with a slightly dampened flannel and go over the walls again. As soon as soiled, a change for a fresh cloth should be made. Thick crust slices, cut lengthwise of a very stale loaf of bread, will also clean walls very nicely. Begin at the top and rub downward with long steady strokes. Old soft linen, cotton and flannels may be kept for such purposes.

**To Clean Carpets and Rugs**—If possible, remove rugs to a grass plot, or hang over line where they can be thoroughly brushed on both sides. Now tie a double handful of either bran or sawdust in a double square of cheese cloth. Dip this swab into ammonia water and rub the carpet-face hard with it until the swab is dirty. Wash in plain water, then dip in ammonia water, and repeat process until surface is washed. The bran swab is also excellent for cleaning carpet upon the floor.

**General Laundry Hints**—Strong soaps harden and shrink woolens. They also remove color in colored material and yellow silk. The soap used should, for the finer fabrics, be in solution in preference to being rubbed directly on the fabric. Drying white cotton and linen pieces in the sun, when possible to do so, bleaches them, thus requiring a less frequent use of a bleach, which is nearly always of such a nature as to be more or less destructive to the fiber. Colored materials, silk and woolens, are best dried in the shade. Avoid the rubbing of woolens, silks, and fine laces. Rubbing roughens them. Sudden changes in the temperature of water in which woolens are washed shrinks them. Anything hotter than lukewarm water is harmful to silks, woolens, and colored fabrics. To soften hard water in which ordinary white cottons and linens are to be washed, use one-half tablespoonful of washing soda to each gallon of water used. For other fabrics, borax should be used.

**To Remove Stains**—For common stains, as of fruits, which soap and cold water will not remove, a dilute solution (five per cent) of oxalic acid is a good preparation. Several applications may be required to remove a very stubborn stain. In every instance of treating any material with an acid, something should be used to neutralize the acid after the treatment. Ammonia is very good to use in this way. Other removers of stains are Javelle water, potassium permanganate, hydrogen peroxide and lemon juice. Hydrogen peroxide will do the work more quickly if a few drops of ammonia are added to the peroxide just before using. If potassium permanganate leaves a stain, this can be removed with oxalic acid. A fact to be remembered with the use of Javelle water, hydrogen peroxide and potassium permanganate is that they also remove color, hence are useful only on white materials. Oxalic acid may be used with colored materials provided the dye is fast. Never allow stained pieces to go through a laundering process before an effort is made to remove the stain; for once treated with hot water and soap, the stain is most likely there to stay.

**Discolorations Which Require Special Treatment**—For iron rust use oxalic acid, or salt and lemon juice. The latter is a very good, simple remedy, but to be most effective after application of the salt and lemon juice, the piece should be placed in the sunshine. For iodine use alcohol. To remove paint or varnish use turpentine. For perspiration apply Javelle water and bleach in the sun. Ink, tea, and coffee stains may be treated with the bleaches mentioned above. Fresh ink stains respond very readily to potassium permanganate followed by oxalic acid. A good simple remedy for ink is soaking the stain in milk, allowing it to stand for sometime so long that the milk becomes very sour. This is also a good remedy for mildew, though several applications may be necessary to completely remove the stain.

**To Make Javelle Water**—Add one pound of washing soda to one quart of boiling water in an agate pan. Mix thoroughly one-half pound of chloride of lime in two parts of cold water. When the latter has settled, pour clear liquid into dissolved soda. Bottle and keep in a dark place. Use very carefully in the proportion of one cup of Javelle water to one quart of hot water. This is a most satisfactory bleach for white cotton or linen materials which may have become yellowed or "dinged" with constant use and laundrying.

**A Good Detergent**—Cut fine one and one-half ounces of Castile soap in one pint of soft water. Dissolve thoroughly and add three quarts of water. To this quantity add one ounce of ether, one ounce of alcohol, and four ounces of ammonia. Use one cupful of liquid to one quart of tepid water.

**To Remove Grease**—Treat with carbon bisulphite, benzine, or gasoline, beginning the treatment outside the greasy spot and working toward it, so that a circle will not be left.

**A Sure Yet Simple Test to Distinguish Linen from Cotton**—Boil sample for four minutes in rosalic acid. If colored pink, linen is present; if not dyed, cotton.

**To Test Silk for Weighting**—Burn sample most completely in a small dish, perhaps. If the residue left upon thorough burning is ashy in appearance, the silk has not been weighted, but if the residue is blackish colored, weighting has been added to the material, which will cause the silk to break very easily in any place where there may be creases or folds.

**For a Mordant**—Use one cup of vinegar to one gallon of water. Let the piece in which color is to be "set," remain in the solution for an hour or two. One-half cup of salt will have the same effect as the vinegar.

# New Summer Salads

HARRIET M. NEWTON

It is surprising how many mothers in this enlightened age will plan day after day what they consider good substantial meals and yet exclude all fresh uncooked vegetables and fruits from the dietary.

There is some excuse for this during the winter months when lettuce, celery and a variety of fresh fruits are hard to procure in the country and small towns. Yet what farmer's wife is there nowadays who cannot go to her fruit and vegetable cellar and find there apples, carrots, cabbage, turnips, onions and other vegetables which can be prepared in many appetizing ways? This is equally true of the majority of urban housewives.

A common mistake is that of subjecting all fruits and vegetables to high cooking temperatures, which partially and ofttimes wholly destroys the vitamins or food substances essential to growth and health. A cooked vegetable or fruit may be included in the meal if desired, but there should also be an uncooked fruit or vegetable.

Following are a few suggestions for "raw" and partially cooked salads which are easily made attractive and palatable. Such a salad supplies not only the vitamins but other body regulators, namely, cellulose, mineral salts and water.

### Cauliflower and Strawberry Salad

2 cups cauliflower
2 cups strawberries
1 cup mayonnaise dressing

Separate the flowerets and let soak in one quart water with one tablespoon salt for twenty minutes. Wash it well and cook in boiling salt water for five minutes. Let cool and cut each floweret lengthwise in small strips.

Cut strawberries lengthwise in small strips, mix with salad dressing and serve upon a lettuce leaf.

### Cucumber and Strawberry Salad

1 cup diced cucumbers
1 cup diced strawberries
¼ cup mayonnaise dressing

Cut the cucumbers in small cubes, sprinkle a little salt over them and let drain for fifteen minutes.

Cut strawberries in small cubes. Mix well with the salad dressing and serve upon a lettuce leaf.

### Banana and Cabbage Salad

2 cups chopped cabbage
2 cups diced bananas
½ cup boiled dressing

Chop cabbage not too fine. Cut bananas in small cubes and mix with boiled dressing. Serve upon a lettuce leaf.

### Dandelion Salad

4 cups dandelion cut fine
2 hard-boiled eggs
2 tablespoons French dressing

Gather the young and tender dandelions, leaving the white bulb intact with the leaves, wash very thoroughly in several waters to be sure they are free from grit. Keep in cold water until ready to serve. Cut in pieces about an inch long. Place upon a lettuce leaf. Slice the eggs crosswise and garnish. Serve with French dressing.

### Cabbage and Carrot Salad

1 cup chopped cabbage
1 cup ground carrots
2 tablespoons chopped onion
½ cup chopped radishes
1 cup mayonnaise dressing

Chop the cabbage fine. Put the carrots and onions through a food grinder. Chop the radishes fine.

Mix cabbage, carrots, onion and radishes together with the mayonnaise dressing. Serve upon a lettuce leaf.

### Cucumber and Rutabaga Salad

1 cup cucumbers shaved thin
1 cup rutabagas shaved thin
2 tablespoons grated onion
2 tablespoons French dressing

Peel cucumbers and shave in thin slices. Peel rutabagas very thin and quarter. Shave in thin slices. Grate the onion. Mix all together and serve upon a lettuce leaf with French dressing.

### Dandelions Boiled

Wash thoroughly and boil in water which adheres to the greens, adding a pinch of salt. Boil until tender. Butter and lemon juice may be added if desired.

They are also very appetizing served with hard boiled egg yolk and lemon juice. Serve upon a lettuce leaf.

# Child Welfare

## How the Other Half is Born

How the other half is born challenges attention. Inaccesibility of medical and nursing aid, according to studies of maternity care in 6 rural areas of 4 States made by the Children's Bureau of the U. S. Department of Labor, is responsible for much suffering and even death.

In a Northwestern county and in a Southeastern county there are nearly twice as many persons per physician as the average for the United States; in a Southern mountain county there were four times as many. A vast area in the far Northwest, larger than the State of Connecticut, was served by three registered doctors. Moreover, most of the doctors in every rural county were located at the county seat, while the remoter parts of the county were entirely without medical service.

More than one-third of the families in the far Northwestern county studied were 20 miles or more from the nearest doctor, 10 being from 50 to 100 miles away. In a Southern county more than one-fourth of the families were 10 miles or more from a doctor, and in another county 25 miles was not an uncommon distance.

Actual miles were not the sole obstacle to obtaining medical help at confinement. Rough roads, crossed by rivers; slippery mountain trails, almost impassable at best, become totally so under bad weather conditions. As a result, doctors arrive from several minutes to 24 hours too late to deliver their patients. Many families, discouraged by repeated failures to get a doctor in time, are tempted to do without one altogether; to others the thought of a doctor does not occur unless the patient's condition becomes critical.

In a Southern county only 68 out of 160 mothers had a doctor at their last confinement; in only 8 out of 66 confinement cases in a Northern county was a physician secured; and in still another more than two-thirds of the women did not have a physician when their babies were born. Three were entirely alone, and 46 had only their husbands in attendance.

Women would in many cases leave home for confinement if hospitals were within reach. But one 5,500 mile area had no hospital; neither had the Southern mountain county. Reaching a hospital meant a journey of several days by wagon trail, or one by stage across the roughest of mountain roads.

In a large number of cases the mother has no nursing care except that given by an untrained hired girl, a relative, or a neighbor. Figures gathered from five rural counties are small in number but appalling in significance: 45 out of 89 babies; 22 out of 28; 12 out of 15; 10 out of 16; 10 out of 14 babies, died *before they were a month old.*

These figures are further corroborated by the Bureau of the Census, which gives the increase in infant mortality rates from premature birth and injuries at birth. The first has increased from 17.5 in 1910 to 21.1 in 1917, and the other from 3.2 in 1910 to 4.6 in 1917. These excessive rates are due to the condition of the mother, and indicate plainly that motherhood is not receiving the protection it needs. As the Census report itself says, these increases "should serve as food for thought."

# Protection of the Health of Infants and Children

The Public Health Service is undertaking a campaign for safeguarding the health of infants and children, and maintains that this work should begin with the pre-natal period of the child's life, and accompany it during its school life, and should include at least the following:

The adoption of measures for the adequate care and instruction of expectant mothers.

Safeguarding the health of expectant mothers engaged in industry.

Accurate registration of all births.

Adequate care of babies in homes, welfare stations and day nurseries.

Instruction of mothers in baby hygiene.

Safeguarding of milk supplies and establishment of pasteurization plants.

Health supervision of children of pre-school age.

Supervision of home and school environment of school children, including sanitation of school grounds and school buildings.

Medical inspection of school children, including provision for the correction and treatment of physical defects.

Mental examination of school children to determine and prescribe suitable treatment and training for children who fail in class work.

These are excellent suggestions, and every one should be adopted and carried out by State and municipal health authorities everywhere.

# Child Labor and the War

How the barriers against child labor were let down during the war is among the subjects dealt with in the Seventh Annual Report of the Chief of the Children's Bureau of the U. S. Department of Labor.

Even before the entry of the United States into the war, American children went to work in increasing numbers to help fill contracts placed with American manufacturers by the belligerent nations. After we were at war, "a mistaken sense of patriotism and the many opportunities for employment at abnormally high wage combined to draw permanently into industry large numbers of boys and girls, many of whom under normal conditions would have continued in school for several years."

The Federal Child Labor which had gone into effect on Sept. 1, 1917, prohibited the employment of children under sixteen in mines and quarries and of children under fourteen in factories, and prohibited work for them between 6 p. m. and 7 a. m. But this law was declared unconstitutional by the Supreme Court on June 3, 1918.

The immediate effect of the Supreme Court decision in States where the State Child Labor standards were lower than those imposed by the Federal law was the prompt restoration of the longer working day for children under sixteen and an increase in the number of working children. In a number of States there was an appreciable increase in the violation of State laws. For example, in one State, the inspectors of the Children's Bureau found that forty-seven out of fifty-three factories visited after the Federal law had been declared unconstitutional were violating the State law by employing children under twelve. Four hundred and thirty such children were employed, while in forty-nine factories visited when the Federal law was in force, only ninety-five such children under fourteen had been found at work. In one State where the minimum age for employment in canneries was fourteen years, 721 children under that age, including fifty who were not yet ten years old, were found at work in canneries in the summer of 1918.

It was in recognition of the seriousness of this increasing employment of young children that the War Labor Policies Board voted that compliance with the standards of the former Federal Child Labor law should be required of establishments engaged on Government war contracts made after the date of the decision.

In consequence of a number of complaints received by the Bureau regarding illegal employment of children in shipbuilding plants, a special investigation of this industry was made by the Bureau in cooperation with the Emergency Fleet Corporation in the winter and early spring of 1919. Practically all the important shipbuilding plants on the Atlantic Coast, Gulf of Mexico, and the Great Lakes were inspected, and there were found to be numerous violations of State and Federal laws. Even more serious, however, was the employment of children in hazardous occupations which in pre-war times had been confined to older boys and men.

In order to counteract the effects of the wartime employment of children and to discourage such employment in the future, many communities undertook Back-to-School and Stay-in-School campaigns during 1918 and 1919, under the impetus of Children's Year. Some work to keep children in school and out of industry has been undertaken in the majority of the States. This work has included agitation for better enforcement of school attendance laws; more attendance officers; more schoolhouses; more and better teachers with higher salaries; a longer school term; better child labor laws; and provision for advising children in choice of occupation and assisting them in finding suitable employment.

By these and similar means many States hope to reduce the illiteracy which is so alarmingly prevalent, especially in rural districts of the United States, and which is so great a stumbling block to Americanization; and to protect children against the hazards of too early employment.

# Following Uncle Sam's Lead

A national children's bureau has been established in Belgium, according to advices received from the U. S. Department of Labor. It is interesting to note that the law establishing this bureau went into effect several months after the child welfare conferences held under the auspices of our own Children's Bureau in the early summer of 1919. Three child welfare experts represented Belgium at that time.

The functions of the Belgian bureau are to "encourage and develop the protection of childhood, and especially to further education with regard to rules of child hygiene and to assist in their application, whether in families or in public or private child-caring institutions; to promote the organization of agencies interested in child hygiene, and to assist them by subsidies or otherwise; to assure supervision by the administrative authorities and physicians over the agencies thus protected."

The bureau is directed by a Board of 40 members, called the "Conseil Superieur des Oeuvres de l'Enfance." This Board has the decision on all questions relating to the protection of children; it issues orders concerning the functions of subsidized agencies; it takes necessary measures for the protection of children within the limits of the law; and determines the use of funds at the disposal of the bureau.

To decentralize the work of the bureau, provincial committees are to be established in each province. These committees will consist of from 6 to 12 members who will see that the work is thoroughly organized throughout the province, that the orders of the Board are enforced; and who will render opinions or give suggestions to the Board. In addition to this, local committees on which local authorities must be represented, are to supervise the infant welfare stations and the agencies which render help to young children and expectant or nursing mothers. One local committee in each community must see that school meals are distributed and special food provided for anemic children. The cost of the school lunches will be met one-half by the State, one-fourth by the province, and one-fourth by the community.

The members of the local committees are to meet in regular conferences with the provincial committees for the purpose of discussing problems of common interest. All committees, both local and provincial, and the Board are asked to respect the religious and philosophic convictions of the families to which the children belong.

In order to gain the approval of the national children's bureau the infant consultation centers, among other things, must provide for a regular and free physical examination of all children under the age of three in families under the care of the centers; for organization of free medical consultation for expectant mothers; organization of educational work to emphasize the value of infant hygiene and breast feeding. The bureau is to organize a system of supervision over placed-out children under seven years of age.

# Children in Need of Special Care Still Classed with Law Breakers

No one is a born criminal, yet young child offenders in many parts of the United States must face the same sort of court trial as that given to criminals. A new bulletin issued by the Children's Bureau of the United States Department of Labor on "Courts in the U. S. Hearing Children's Cases," states that of the 175,000 children's cases brought before courts in the United States in 1918, approximately 50,000 came before courts not adapted to the handling of children's cases. At least one court in every State reported that children awaiting trial were detained in jails, and 37 courts in 18 States declared that no effort was made to separate children detained in jails from old and hardened offenders, though such separation is required by law in many of these States.

Only 321 courts out of more than 2,000 had special organization for trying children's cases, such as separate hearings, probation service and a system of legal and social records. Twenty-one of these were juvenile courts created by special law and independent of other court systems. Almost half of them were in 5 States.

Although every State in the Union, except Wyoming, had legislation providing for juvenile probation, less than half the courts trying children's cases actually had probation service, and less than one-fifth had regular full-time probation officers paid for by the court.

Even where the regular judicial proceedings had been so modified that they were more humane and effective in dealing with children, the organization was frequently defective in some essential. Many courts, for instance, had arranged for private hearings, but still through fines and punishments maintained the old attitude that the offender was a law breaker rather than a child in need of special care and protection.

Many courts had failed to secure adequate information regarding the child's home conditions, family circumstances, physical and mental conditions and personal characteristics. A large number of children who are brought before courts have been handicapped by heredity, faulty home training or bad influences in the community. These children can be helped only by a sympathetic judge who realizes that the purpose of juvenile courts is education and discipline rather than punishment.

Of the 2,000 courts only 145 reported special provision for mental examination, and many of these examined only cases presenting special problems. In many places a physical examination was made merely in connection with commitment. In many others no children were examined except those who gave evidence of abnormal condition. In 13 courts clinics were maintained as a part of the court organization. All of these were in cities of 100,000 or more population.

Children in small towns and rural districts had the poorest chance for an adequate hearing, as the courts in less populous places were generally illy equipped for children's work. The bulletin recommends for these communities a county system, providing a unified probation service, a detention home and a clinic for child study.

# Infant Mortality from Syphilis

Since Dr. Osler a few years ago called attention to the fact that syphilis is the captain of the men of death, destroying annually more human lives than any other disease, much evidence of the correctness of his views has accumulated, and no one has undertaken to dispute his statements.

In a recent medical paper, Dr. P. C. Jeans, of St. Louis, states that in this country 10 to 20 per cent of all adult males and 10 per cent of all adult females are syphilitic, and 5 per cent of all infants.

In ten per cent of all marriages one of the parties is syphilitic. Thirty per cent of all offspring of syphilitic parents are born dead. Less than one sixth of all offspring of syphilitic parents escapes infection from this terrible disease.

The control of syphilis is the greatest problem with which our sanitary authorities have to deal. It must be treated as any other contagious disease. Infected persons must be placed under necessary quarantine restrictions. The day for silence and concealment has passed. It is criminal longer to ignore this terrible menace to human welfare.

# Scurvy and Lime Juice

The *Lancet* tells the following interesting story of the use of lime juice in the Navy for the prevention of scurvy:

"The lime juice now issued to the Navy and Army for their use as a preventive of scurvy is the juice of the sour lime (*citrus medica,* var. *acida*) grown in the West Indies. To it has long pertained the reputation made in the Navy 125 years ago by the 'lime juice' used then. But that 'lime juice' was not the juice of the sour lime.

"The citrous fruits first used by the Navy came from the Mediterranean, largely from Spain. They did not include the *sour* lime, which is not grown in Europe; they did probably include the *sweet* lime (*Citrus medica,* var. *limetta*), but consisted principally of lemons (*Citrus medica,* var. *limonum*). In 1796 the war cut off Spain as a source of supplies, and lemons were brought from Lisbon; the supply was uncertain, insufficient, and very expensive until 1803, when contracts were first made through the naval representative at Malta. Thereafter, for many years, an annual contract secured an ample quantity of the juice of lemons grown in Malta and Sicily. This enabled the Admiralty to employ 'lime juice' much more widely than had been done before, and for years the issue was a general one and not confined, as before, to the sick and to the crews of ships on foreign service. Together with the improvement in victualing and in the general conditions of living on board ships of war, this was successful in expelling scurvy from the Navy in the course of a very few years, and by 1810 the records of scurvy cease. From that time the disease has occurred only in isolated and exceptional cases.

"Before the middle of the nineteenth century complaints were made about the quality of the lemon juice sent from Malta, but by that time opportunities for the trial of it therapeutically were rare in the ordinary service of the Navy. On the return of Sir James Ross from the Arctic regions in 1849, however, it was shown what disastrous results might follow from a deficiency in the supply. In order that other ships then about to leave England on Arctic service should be assured of a reliable protection from disease the Medical Director-General caused lemons to be squeezed at Deptford for them, and this provision proved fully adequate. Arrangements were made for the careful supervision thenceforward of all lemon juice bought in Malta.

"About seventeen years later, when the development of the lime cultivation in the West Indies made available a quantity of lime juice, the Admiralty transferred its contracts, and thereafter issued the juice of limes instead of that of lemons. The essential inferiority of limes to lemons in antiscorbutic power was not suspected, and the new supply was believed to be far better than the old. It was produced by English firms under such conditions as would secure its soundness and purity.

"Polar exploration again provided the test of its value; and by comparing the experience of the ships provided with the pure lemon juice in 1850 with that of the first Arctic expedition that took out West Indian lime juice, we get a very satisfactory human experiment demonstrating the relative value of the two fruits. The setting of the comparison is made more precise than is generally looked for in historical evidence by the following facts:

"The lemon juice for the 1850 expedition was prepared at Deptford, and much attention was paid to the best method of preserving it and for obtaining its maximum value when consumed at sea. The juice was issued to the ships under regulations which insured accuracy and definiteness in the quantity consumed by each member of the crew. The daily ration, one ounce, was issued to each man individually, and drunk by him in the presence of an officer. In 1875, when Sir George Nare's ships, the *Alert* and the *Discovery*, sailed to discover the North Pole, Sir Alexander Armstrong who had been medical officer on the *Investigator*, was Medical Director-General of the Navy. So satisfied had he been with the results of lemon juice during the voyage of the *Investigator* that he gave directions that the juice should be issued in precisely the same way on the *Alert* and the *Discovery* as on the previous expedition; that is, in the same quantities, and with the same safeguards against any variation in the consumption of it. But the juice issued to Nare's ships was the 'lime juice' from the West Indies.

"The two expeditions were so near to one another in time that the general conditions of diet, etc., were very similar; but the latter one did enjoy certain improvements of diet suggested by accumulated experience, including double vegetable and fruit rations, additional meat, sugar, etc., and a reduction in the amount of alcohol allowed. In casual supplies of fresh game and herbs there was no outstanding difference. Indeed, every detail of the conditions is very nicely adjusted for the comparison, any difference there was being in favor of the lime juice ships.

"And the result was not only clear, but emphatic. Nare's ships, supplied with West Indian lime juice, went out in May, 1875; they had their first case of scurvy in January, 1876. Premonitory scorbutic symptoms showed themselves in a further number of the crews in early spring, but they were not recognized, as scurvy was never thought of as a possible danger. With the starting of the sledge expeditions early in April, 1876, scurvy developed with great severity in the sledge crews and three deaths occurred; concurrently there was a development, only less serious, among the men who remained on the ships. The expedition came home to England in October, 1876.

"On the other hand, the *Investigator*, supplied with lemon juice, left England in January, 1850, and got into the ice during the following summer. Throughout the next winter and the spring sledging she had no scurvy. In autumn, 1851, her rations were reduced to two-thirds and her lemon-juice ration was halved, and she still had no scurvy through the following winter and spring. Only in May, 1852, her first case developed, twenty-seven months after leaving home and after seven months of short rations and reduced lemon juice. Over fifteen months passed before her crew were rescued, and in that whole period of three and a half years she had three deaths from scurvy, the same number that occured on Nare's ships within one year.

"The conclusion suggested by the history of this long immunity from scurvy during the voyage of the *Investigator* is supported by the history of other ships of her time, while the failure of the lime-juice ration to prevent scurvy on the *Alert* and the *Discovery* is repeated in later cases where it has been relied on as a protection. In the absence of any other satisfactory explanation of the contrast afforded by the experience of these two expeditions—and the prolonged examinations of the Scurvy Commission of 1877 discovered none—*it must be accepted as a very convincing piece of evidence that lemon juice is far more effective than lime juice in the prevention of scurvy. It fully confirms the results of the laboratory experiments which have determined more exactly their relative value for this purpose.*"

# The Sugar of Honey

Honey is chiefly made up of two sugars, levulose and dextrose, the sugars to which the juices of sweet fruits chiefly owe their sweetness. But a new sugar, known as melezitose, has recently been found in honey. This is a sugar which is at present chiefly of value to chemists and bacteriologists, who use it for certain tests, especially for distinguishing between closely related species of bacteria. Melezitose has heretofore been a very rare sugar, but recently the United States Department of Agriculture has obtained it in considerable quantity, having now in store several pounds of this rare sweet.

The Department learned that the bees in certain sections of Pennsylvania were dying because the honey which they had stored up had crystallized. On examination it was found that the crystallized substance in the honey was "melitose" which, according to *The American Food Journal,* from which we quote, "derives its name from *melez,* the French name for the larch tree, on which it was originally discovered in the form of honeydew. It also occurs in a sugary incrustation, or manna, on a leguminous tree in Persia and adjoining countries. Recently, it has been found by the Bureau of Chemistry in a similar product on the Douglas fir in British Columbia. And now it has turned up in Pennsylvania, stored away in the honeycomb, in numerous hives. In this instance the following origin of the substance has been worked out.

"The scrub pine, and rarely other species of pine, are subject to attack by a plant louse and by a scale insect. In the course of their life activities these insects produce a honeydew which is rich in melezitose. In dry summers, after the white clover flowers have ceased to yield honey, the bees turn to this honeydew, and collect it, but it crystallizes as fast as they store it away. This occurred in 1917 and 1918, and considerable losses were suffered by beekeepers. In 1919 the weather was so moist during July that no melezitose was gathered by the bees at all. But it probably will be collected in future whenever the summer is dry; and the honey of central Pennsylvania may afford a permanent source of sugar previously so rare as to be only imperfectly known. The Bureau of Chemistry extracted considerable quantities from the honey of 1917 and 1918, and is making extensive experiments with it. Rare as it has always been, there is a definite demand for melezitose for use in scientific laboratories. It can be distinguished from other sugars by certain peculiarities of crystallization observable with the polarizing microscope."

# Bottle-Fed Infants

Recent studies of infant nutrition have shown that one of the reasons for the poor nutrition of very young bottle-fed children, as shown by failure to grow at the proper rate, is the lack of the growth-promoting vitamin which is found in abundance in mother's milk and in full cow's milk, but is necessarily diminished in proportion when water is added to the cow's milk to dilute it. The dilution is of course necessary, but should be compensated for by the addition of the essential vitamin.

This may be obtained from vegetables, as for example, by adding thin potato soup to the diluted milk.

Another plan is the use of malt sugar in place of cane sugar. Cane sugar is a pure carbohydrate product. It contains nothing but sugar and is intensely sweet. Malt sugar is less sweet — an advantage, because in this respect it more nearly resembles lactose, the natural sugar of milk.

Malt sugar also has the great advantage that it contains the precious vitamins in concentrated form, as well as other things essential to nutrition. Malt sugar, in other words, is something more than sugar. Cane sugar is simply sugar—nothing more or less.

Malt sugar contains considerable quantities of lime and of iron. The last-named element is an important addition to cow's milk, which is very often deficient in iron. In diluted cow's milk, in fact, the amount of iron is so small as to be practically negligible. The young infant needs iron in building blood as it grows and increases in size. This is an important particular in which malt sugar is superior to lactose or milk sugar, which contains no iron.

But malt sugar has still another important advantage which has only recently come to be appreciated, namely, the considerable amount of dextrin which it contains. Pavlov showed the great value of dextrin as a peptogenic substance; that is, a substance which actively promotes the digestive processes. This makes malt sugar of much advantage as an aid to the feeble digestive powers of the average infant.

Torrey, Rettger and others have recently shown that dextrin is one of the best of all substances for promoting growth of the protective germs. These are acid-forming germs which make their appearance in the colon of the breast-fed infant within a few hours after birth, the *B. bifidus* and *B. acidophilus* described by Tissier of the Pasteur Institute.

When cow's milk is fed, these essential protective germs tend to disappear, their place being taken by putrefactive germs which produce poisons and cause dark, foul-smelling stools, fretfulness, restless sleep, lack of appetite, delayed growth and other symptoms of the chronic poisoning caused by these dangerous germs which, unfortunately, are always found in great numbers in cow's milk.

Torrey, experimenting with white rats, found that by feeding dextrin the protective germs could be restored within three or four days, the putrefactive germs disapparing almost wholly.

This is a discovery of very great importance and helps to explain the benefits derived from the feeding of barley gruel, malt soup, potato soup and other preparations which contain more or less dextrin. In malt sugar, dextrin is found in greater abundance than in any other food valuable for young children, a fact which in part doubtless explains the great benefits which follow the substitution of malt sugar for cane sugar in the diet of bottle-fed infants, an observation which has led leading specialists in the care of children to recommend malt sugar in infant feeding.

The malt sugar should be added to the milk or milk and water mixture in the proportion of one ounce to the pint.

Malt sugar is now obtainable at most drug stores. One of the best preparations is maltose sugar. This is commercially known as meltose, which may be had either in powder or syrup form.

## The Cause and Treatment of Influenza

Maggelssen, a Norwegian physician, has made a careful study of influenza epidemics at Christiana, Norway, and shows that the epidemics occur after a very hot summer following an unusually cold winter with sudden transition from cold to hot. He shows that the virus of influenza is made up of germs with which we are acquainted in connection with catarrhal fever and ordinary colds. The predisposing cause of an attack of influenza is a temporary constitutional weakness or lowered resistance, which may be the result of climatic or seasonal influences.

The observer arrives at the conclusion that in epidemics of influenza one should take care to avoid exposure to extremes of heat or cold, and especially to guard against sudden transitions of temperature. He thinks the young and robust are more likely to suffer because of their greater exposure. In his experience, prolonged sweating and resting in bed offer the best results in treatment.

## Child Welfare Work in New Zealand

Dr. Truby King, who organized child welfare work in New Zealand, when on a visit to this country, being asked for an explanation of the method by which he had made so great a success of his work for children in New Zealand, replied: "I began at the top in New Zealand and worked down, having the most prominent and intelligent women in New Zealand to be the first to take the courses in child care. In America you began child welfare work at the bottom, and it will be exceedingly difficult to make it work up."

## Pellagra-Producing Diet

McCollum, Simonds and Parsons, in a review of the work of Chittenden and Underhill, have shown that the characteristics of the pellagra-producing diet are a deficiency of the fat-soluble-A vitamin, an inefficient supply of lime and other salts and a deficiency of complete proteins.

## More Milk and Vegetables Needed

Professor H. C. Sherman, of Columbia University, thinks the average American family is suffering from excessive use of meat, and urges the importance of more liberal supplies of milk, fruit and vegetables. Professor Sherman himself makes small use of meat, and is quite sympathetic toward the vegetarian regimen. He insists that the average American family would be better fed if the meat bill were reduced to the size of the milk bill, at least, and if as much money were expended for fruits and vegetables as for meat.

## The Blood Count

Bing, of Copenhagen, has recently made an interesting study of the blood count of persons of different ages, and finds that "the average number of red corpuscles in 19 presumably healthy men under 50 was 5.5 millions, the range from 4.6 to 6.1, with a hemoglobin average of 112 per cent. In 41 women the corresponding figures were 4.9; 4 and 5.9, with hemoglobin 105 per cent. In 22 men over 60, the erythrocyte average was 6.1 millions, the range from 4.9 to 9.8, with hemoglobin average of 104 per cent; and in 21 women of 60, the erythrocyte average was 5.1 million, range from 4.2 to 6.4, with 96 per cent hemoglobin average. Tests after drinking large amounts of fluid showed a higher erythrocyte count than before. Comparison of the count in the blood from the ear, from a vein, from the abdomen and from the finger tip of the same person showed differences up to 1.6 million. The average count is thus 5.5 million for men and 4.5 for women, but the physiologic figure varies within wide limits. The erythrocytes are evidently not evenly distributed through the body. The higher erythrocyte average count in the elderly is not an absolute rule, as in some of the younger persons equally high figures were noted, and, in some of the elderly, figures as low as the lowest in the younger subjects.

## Flour from the Peanut

It is found by special treatment of the pressed cake obtained after the extraction of the arachis oil from the peanut that an excellent flour, containing only five per cent peanut oil may be obtained. The flour contains a high percentage of protein and is high in lysin, although deficient in tryptophan. The latter element may be supplied by the addition of milk.

## The Low-Protein Diet Endorsed

Benedict and his colleagues of the Carnegie Nutrition Laboratory, of Boston, after many years maintaining a strict opposition to the advocacy of the low-protein regimen, as a result of elaborate and exhaustive experiments, were led to the conclusion that the low-protein regimen "in all probability is a logical procedure that cannot be attended with any untoward effects, even if long continued."

Benedict further asserts that "to instill into the world at large a belief that pronounced lowering of rations is not necessarily accompanied by a complete disintegration of the organism and collapse of mental and physical powers may, after all, be of real service."

## Anti-Scorbutic Value of the Tomato

Recent experiments have shown that the tomato is of great value as a means of preventing scurvy. This was found to be true not only of fresh tomatoes but of tomatoes dried at a temperature not to exceed 140 degrees F. One gram (one-fourth dram) of dried tomato was found to be sufficient to keep a guinea pig free from scurvy when fed upon a diet which otherwise would have given rise to this condition.

## Dietetic Views Changing

The *Medical Record* says: "Views as to the value of the various foods from the nutritive standpoint have changed greatly within the past ten or twenty years. The vitamin content of food must not be greatly impaired or nutrition will not only be unsatisfactory, but beyond a certain point pathological conditions will be produced. Meat has been shown to be in many respects, and especially so far as vitamins are concerned, inferior to other foods which not long ago used to be regarded with thinly veiled contempt. The pulses, either fresh or germinating, have been elevated to a high position among the food products and are as economical as they are nutritious."

## Fruit Juices for Young Infants

Breast milk contains vitamins which are essential for the development of a growing infant. These vitamins are found in fresh cow's milk, but are to a large extent, if not completely, destroyed by sterilizing or even pasteurizing. They are also lacking in all sorts of prepared infant foods. The use of such foods will give rise to scurvy in an infant. Orange juice and tomato juice will prevent the development of scurvy and keep the infant thriving. A very young infant should receive a teaspoonful daily; at three months a tablespoonful a day is required; at six months one ounce; at nine months two ounces; at one to two years four ounces.

## New Observations of Beri-Beri

Recent observations by Walshe seem to demonstrate that in seeking for the cause of beri-beri, a disease which formerly destroyed more than 20,000 persons annually in the Philippine Islands, certain points have been overlooked. It appears that starved pigeons do not develop beri-beri, although they live long enough to do so. The suggestion is made that in the absence of the special hormone lost in polishing rice, the animal body is not able properly to utilize starch, and that certain poisons are developed to which the peculiar symptoms of the disease are due. This view accounts for the toxic symptoms which appear in this disease as well as in pellagra and other deficiency diseases.

# PUBLISHER'S LETTER BOX

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GOOD HEALTH

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# EDITORIAL DEPARTMENT

## The Remarkable Conversion of Doctor Woods-Hutchinson

Doctor Hutchinson has for so long a time served in the capacity of a special pleader for the packing industry that we had given him up as an incorrigible carnivore; but a miracle has been wrought. A conversion almost as remarkable as that of Saul of Tarsus has so transformed Dr. Woods-Hutchinson that he has written an article on nutrition in which he has not said a word in favor of flesh-eating. In it he rather goes to the other extreme, and suggests that "possibly some day we may be able, like Nebuchadnezzar, to eat grass like the ox." The Doctor explains his sudden change of base by declaring that "the good ship Science of Nutrition has been torpedoed, and is in danger of sinking. The swift-whirring tube which did the deadly work was charged with a new high explosive called *vitamin*, capable of blowing up our scientific theories of food and diet, and making us radically revise the other half, which is probably very good for us."

But the Doctor is mistaken. It is not the "good ship Nutrition" which has been torpedoed, but the leaky old flat-boat in which the Doctor has been taking a Rip Van Winkle nap. Vitamins were discovered years ago. It is more than likely that a good many of Dr. Hutchinson's readers, through the millions of leaflets which have been sent out during the last few years by the United States Agricultural Department, through health associations, the Red Cross, and Women's Clubs all over the United States, know more about vitamins than Dr. Hutchinson tells in his article in the *Metropolitan.*

The Doctor has just made the discovery that he himself is simply "a magnified plant louse," for he says, "Those of us who eat meat are doubly parasitic, living upon other parasites, who live upon grass."

We are certainly glad that the Doctor has wakened up at last and discovered that flesh abstainers are not such a silly lot, after all, and that "there are not lacking enthusiastic physiologists of vegetable leanings, like Hindhede of Copenhagen, who declares that the people of Denmark not merely lived through the blockade of the late war, but actually improved in health, on a diet consisting almost entirely of whole wheat bread, barley porridge, potatoes and cabbage, with milk and butter."

But we feel jarred a little when the Doctor adds to the above quotation, "But few of his scientific colleagues admit his conclusions." In this the Doctor commits a grave error, and shows still a leaning towards the flesh-pots. Dr. Hindhede, the eminent Danish Physiologist, does not deal in conclusions. He states facts. He shows that the death-rate of Denmark fell several points, and reached the lowest point on record during the war, and this on a diet which Hutchinson has always maintained was inadequate to sustain life and energy at a maximum.

From the following paragraph, it may be seen that the Doctor has really become a super-enthusiast in the advocacy of the vegetarian regimen. He says:

"It may be that the day will come when there will be an alfalfa bin in every modern kitchen or an alfalfa castor on every table along with the pepper and salt; and, 'Please pass the vitamins' may be heard above the clatter of spoons and forks, at meal time."

Now that the last of the champions of kreophagy has surrendered, we may hope that the reading public will no longer be afflicted with the flood of misinformation respecting the necessity for flesh-eating, which has so long been current in the public prints. Error dies hard. One by one its champions have been laid low. The good old ship "Nutrition" is sailing right along. Nothing has happened to it. It was Dr. Hutchinson's water-logged craft that was hit and not the ship. And now that the Doctor has clambered on board, we'll give him a friendly greeting and promise him a safe and pleasant voyage; but we beg him to restrain his enthusiasm within reasonable bounds. If he should become a fanatical "grass eater," sensible food reformers would be ashamed of their young neophyte.

# Eat More Potatoes

No doubt the substitution of breakfast foods for the old-time breakfast of griddle cakes, fried potatoes, fried pork and other indigestibles, has been in the interest of the conservation of the American stomach, but there is much reason to believe that the Irish potato, steamed or baked, might well fill a larger place in the national bill of fare, especially as a breakfast food. A potato digests in much less than half the time required for the digestion of a slice of bread, and affords nutritive substances in some respects superior to those provided by wheat.

The housewife adds potatoes to her bread sponge because it encourages the growth of the yeast plant and so makes the bread rise better. This growth-promoting vitamin which the potato supplies in great abundance, is as active in encouraging the growth of children as in helping the bread to rise. It is equally useful to adults in maintaining good nutrition and promoting the repair of tissues.

The potato and other root vegetables are also superior to cereals in the fact that they supply an abundance of organic alkalies, a combination of soda and potash, which is of the greatest service in neutralizing the acid waste of the body and promoting the purification of the tissues.

The sedentary habits and the free use of meat and cereals in the diet of the average American produces a wide-spread tendency to acidosis, a common cause of premature senility, hardening of the arteries, Bright's disease and other degenerative processes. If the average American would eat four or five times as much potato as he now eats, and omit from his diet an equivalent amount of cereals and cane sugar, the result would be a notable lowering of the death-rate and a marked increase in physical fitness and freedom from crippling diseases.

# An Argument Which Does Not Convince

An English author of a work on dietetics in discussing the question of vegetarianism makes an argument so potently lacking in consistency and force that we present it for the entertainment of our readers.

Says this author: "Vegetarians contend that their diet tends to health and longevity. First of all, it must be stated that the vegetarian is quite as liable to contract disease through his food or to suffer food-poisoning as the flesh-eater. The vegetarian urges that meat causes diseases of the liver, gout, stone, gravel, chronic rheumatism, skin diseases, disturbances of the vascular system, arteriosclerosis, kidney disease, migraine, and kindred ailments; that ptomaine-poisoning may follow the consumption of meat; that the animal consumed may be the subject of anthrax, pneumonia, tuberculosis, glanders, various worms, and other diseases communicable to man; that oysters and other shellfish disseminate typhoid fever, and so on. But unfortunately quite as many examples can be produced against vegetarian diet. An excess of bread or other starchy food from the vegetable kingdom produces indigestion, flatulence, acidity, congestion of the liver, hemorrhoids, and promotes obesity. Sugar has an enormous value as an energy-provider, but an excess of it will produce evils similar to those following an excess of starch, and it especially causes catarrh of the stomach, attended by an abundant secretion of mucus, which envelops particles of the food, and prevents the digestive secretion from getting to and acting upon them, thereby causing indigestion and ultimately increasing the catarrh and the symptoms attending it. The ingestion of hard fruit, nuts, and fibrous vegetables, is a frequent cause of indigestion.

"The communicability of disease is by no means confined to flesh foods. The advice of medical practitioner in the tropics is—'Eat no uncooked vegetable, nor any raw fruit, unless you can pare it or peel it.' Enteric fever, dysentery, cholera, diarrhea, and various other diseases have often been traced to a disregard of such advice. Even in northerly and temperate climates the consumption of raw, unripe, or over-ripe fruit is a frequent cause of diarrhea, choleratic diarrhea, and has been blamed for the occasional occurrence of tropical disease in a temperate climate. Neither are vegetables free from blame. That terrible disease hydatids is due to the *Taonio echinococous,* a minute tapeworm which is taken into the body in the worm of ova or particularly developed *Taoni* or uncooked vegetables, such as watercress, celery, lettuce ,etc. Actinonycosis is due to the ray fungus which enters the organism with green vegetables, such as watercress, celery, lettuce, etc., and also with cereals. Ergotism, due to the fungus *Oidium abortifacions,* is a disease which commonly affects the consumers of rye-bread. Pellagra has been associated with the consumption of maize, and beri-beri with rice. In fact, superior freedom of vegetarian diet from disease-giving properties vanishes entirely when the subject is carefully considered."

The learned author makes a very poor showing when he presents us, as above, with a category of disorders which arise from vegetable foods. Certainly, it is hardly fair to present such ordinary symptoms as indigestion, flatulence, acidity, congestion of the liver, hemorrhoids, and obesity as an offset against the long category of diseases previously mentioned as attributable to meat-eating. This is especially true when it is remembered that flesh-eaters are especially more subject to the disorders than are non-flesh-eaters; in other words that indigestion, flatulence, acidity, etc., are not confined to eaters of starch and vegetable foods, but are more common among meat-eaters. The charge against sugar is well deserved, but it is true only when cane sugar is used and in inordinate quantities, an evil practice which is quite as common among meat-eaters as among meat-abstainers. Again, indigestion resulting from imperfect mastication of hard fruits, nuts, etc., is not a disorder confined to vegetable feeders. One of the most common causes of choking is the swallowing of imperfectly chewed meat. The advice of medical practioners to avoid the use of uncooked vegetables and fruits in the tropics without removing the outer skins is necessary, not because of any intrinsic property of the fruit itself but because disease germs are so prevalent in the tropics that all foods, vegetable as well as animal, are likely to be contaminated. The eating of raw meats in the tropics would likely give rise to still greater perils than the eating of raw fruits and vegetables.

Raw fruits and vegetables may be disinfected by washing and dipping in a one per cent solution of peroxide of hydrogen.

Ergotism is one of the rarest disorders, whereas chronic auto-intoxication, the result of inoculation of the intestine with meat germs and the putrefaction of undigested residues of meat in the colon, is universal among meat eaters, including lions, tigers, dogs, and other flesh-eating animals.

# Vicious Hotel Coffee

The *Hotel News of the West* warns its readers to look out for hotel and restaurant coffee, which, according to the *News* is made altogether too strong. Says the *News,* "The average restaurant coffee will put the ordinary man on nervous edge almost quicker than a glass of whiskey."

Coffee is bad, no matter where it is brewed, in the restaurant, the hotel or the private kitchen.

Dr. Wiley some years ago showed that cheap restaurant coffee contains two grains of caffein to the cup—a full medicinal dose. Coffee served at first-class hotels, according to Dr. Wiley, contains four grains of caffein—a double medicinal dose.

The coffee habit is one of the most active causes of the growing frequency of high blood pressure in this country. In other words, coffee gives one a temporary sense of freshness and vigor at the expense of making him prematurely old.

# You Are As Old As Your Skin

With your fingers held out straight, pick up a fold of skin on the back of the hand, as shown in the accompanying cut. If the skin snaps quickly back into place, you are young. If it stays up in a ridge, you are old. It's no use to say you aren't. You are seventy or eighty or ninety years old, no matter what the date of your birth. You are prematurely old. Even so, perhaps by painstaking effort you can win back some of the youth you have lost.

Many years ago, a French physiologist made the sage remark which has since become classical: "A man is as old as his arteries." This statement is literally true, because the arteries are the channels through which nourishment reaches the individual cells and tissue fibers of the body. The ever-waning energy of the living cells is replenished by the new supplies of nutritive material which reach them through the blood. When this is greatly reduced, they degenerate. Still further: Every living cell is continually, by its activity, producing poisons. If left to accumulate in the cell or about it, these poisons first depress and cripple and finally actually destroy the cell. A poisoned cell is intoxicated. This condition of the cells is fatigue or exhaustion.

When the arteries become old, they are shriveled and narrowed. The life-giving streams which poured in myriads of rivulets through every nook and corner of the body dwindle, and finally, in many areas, dry up completely and cease to flow. The result is first weakness, decreptitude, senility, and, finally death.

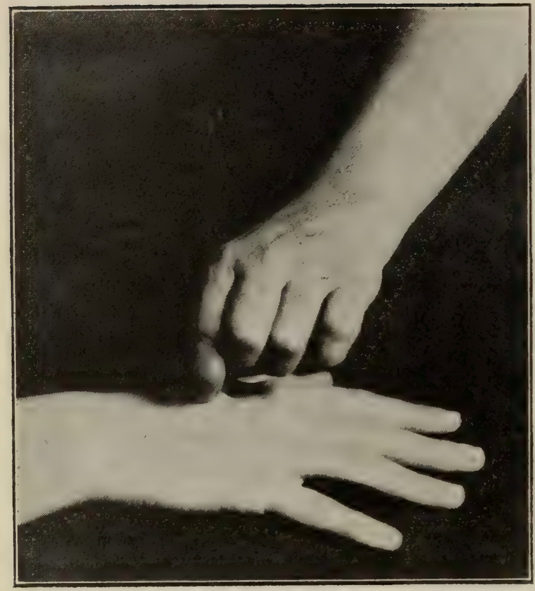
It is equally true to say, "A man is as old as his heart," for when the heart fails to circulate the blood, the effect upon the tissues is the same as when the arteries shrivel so that they can no longer convey the blood.

We may also say, "A man is as old as his kidneys," for it is the duty of the kidneys to remove the poisonous acid wastes of the body. When these are left behind, the cells are rapidly poisoned, and the same condition is produced as when the arteries are shriveled and no longer able to carry to the cells fresh blood to wash away their poisons. The blood becomes saturated with poisons and all the cells become crippled and degenerate, until finally death closes the scene.

It is likewise perfectly correct to say, "A man is as old as his liver," for the duty of the liver is to destroy poisons; and when it, through overwork, becomes prematurely worn out and unable to perform its normal function, the blood is flooded with toxins which damage every cell and tissue and cause premature decay and death.

Again, it may be said, "A man is as old as his skin." The skin is an organ essential to life. One can get along without a stomach. The writer has removed a score or more of stomachs, and the patients got along much more comfortably without than with them, but the skin is an organ which is essential to life. One could not live without it. When an animal is deprived of the function of its skin, death occurs within a few hours. A healthy skin is an important indication of good bodily health. A dingy, dry, wrinkled or diseased skin is always an indication of some serious morbid condition which needs attention. A healthy skin is thick, elastic, translucent. The bloom of health is on it, as upon the skin of a ripe, luscious peach.

The skin is kept in health by the thyroid gland, which presides over its functions in



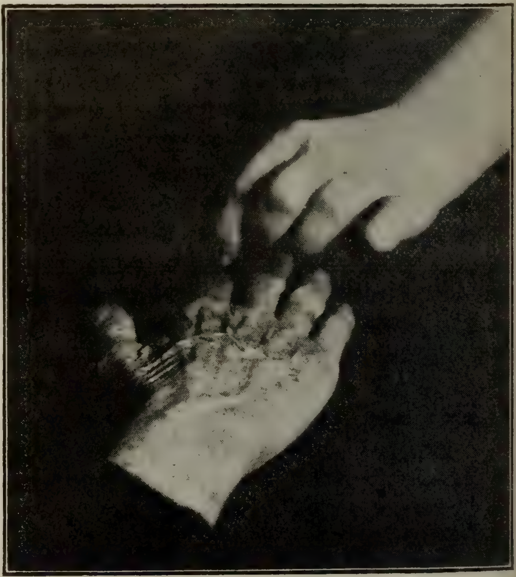
Testing the Skin of a Girl of Twenty.

a wonderful way. It is the function of the thyroid gland to destroy poisons, but the principal source of the poisons with which the thyroid gland has to deal is the alimentary canal. When putrefaction occurs in the colon as the result of constipation, a state of things always present in meat-eaters, floods of poison are continually poured into the blood, which impose upon the thyroid, as well as the liver and the kidneys, an enormous amount of useless and unnecessary work, by which they are prematurely worn out.

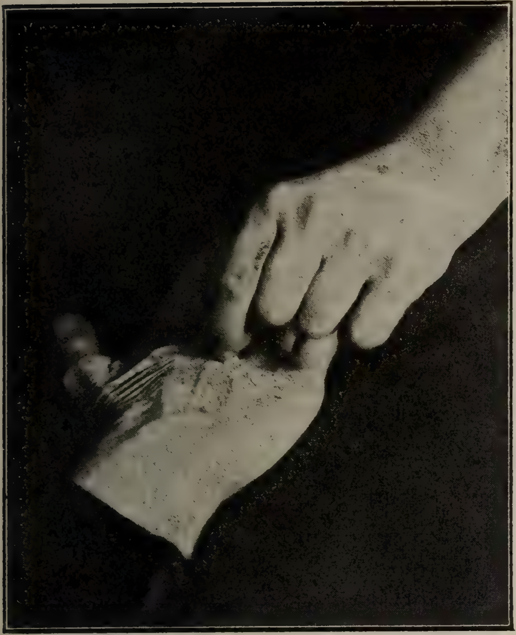
The wasting atrophy of a worn-out thyroid gland causes it to shrivel in size, a condition indicated by a depression at the lower part of the neck in front, just above the breast bone. This may be constantly seen in old people, also in middle-aged persons who are prematurely old. In such cases, the skin is always found to possess certain characteristics which are a certain indication of old age. The skin, instead of being thick and elastic, snapping quickly back into place like a piece of rubber when a fold is pinched up, will be found to be thin, wrinkled, parchment-like, often so nearly transparent that the veins can readily be traced by their bluish color, and not infrequently marked by dark brown spots scattered here and there. These spots are at first small and almost imperceptible, but as age advances, they become more intense and finally of a very dark brown tint. These spots are produced by the deposit in the skin of a poisonous pigment known as brenzcatechin.

A glance at the accompanying cuts will show at once the contrast between the skin of youth and that of old age.

For years, the writer has given much attention to the skin as an indication of the degree of advancement of the old-age process. When a fold of skin on the back of the hand of an old person is picked up between the thumb and finger, the ridge that is formed will remain elevated above the skin for some seconds, while in a young person, a fold of skin picked up in a similar manner, snaps back into place the instant it is released. The writer's former method in examining the skin in this way, was to pick up a longitudinal fold of the skin. Some years ago, in examining a lady's hand in this way, she surprised us



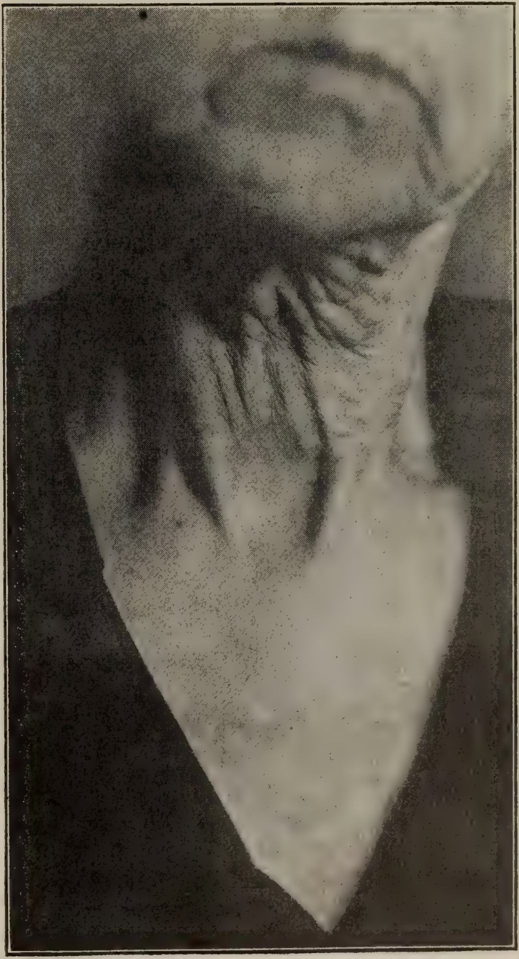
Hand of a Woman 75 Years Old.



Testing the Skin of a Woman 75 Years Old.

by remarking, "You don't do it right, doctor. You don't do it right. My uncle, Judge Jones, told me that in the old slavery times the buyers, in examining slaves, used to examine the skin of the hands by pinching up a transverse fold. If the fold stood up instead of instantly disappearing when the skin was released, the examiner would say, 'Oh, you're too old for any good. I don't want you.'" Evidently, the slave dealer found this simple test a better means of determining the age than the testimony of the poor slaves themselves or the masters who sought to dispose of them.

Now look at your hands and see what story they tell. If you find a shiny, wrinkled skin, or one that has lost its elasticity, this is an announcement of the fact that you are prematurely old; and if you haven't already taken cognizance of this fact and begun to mend your ways, to economize your energies, to cultivate health and longevity, you would better begin at once. There is no time to be lost, for from now on your progress toward physical bankruptcy will be rapid, unless you adopt every possible means to conserve youth, vitality and life. Cut out meats of all sorts from your bill of fare. Discard tea and coffee. Take pains to masticate your food thoroughly. Avoid overeating. Discard condiments of every sort. Go early to bed, and sleep eight or nine hours out of the twenty-four. Take a day off for an outing two or three times a month. Live in the open air as much as possible. Sleep in the outdoor air on a porch or with widely opened windows. Drink two or three quarts of water every day. Make a liberal supply of greens a part of your daily bill of fare. Eat potatoes largely instead of bread. Eat a big spoonful of bran at every meal. Don't worry.



Neck of a Woman at Seventy-five.

# The Slaughter of The Innocents By Christian Science

Christian Science has some good points. It sometimes makes optimists out of chronic pessimists. It charms away the pathological ghosts and hobgoblins which haunt certain people who think themselves sick when they are only ill in their imaginations. To those who are intellectually capable of accepting the Christian Science cult, it affords peace of mind and solid comfort. If Christian Science went no farther, there would be no ground for any grave charge against its so-called philosophy, but unfortunately, "Eddyism" does not content itself with supplying a mental placebo to the imaginary sick, but undertakes to eliminate the whole science of medicine and surgery, one of the most precious boons which modern scientific progress has conferred upon the race. When an epidemic of "flu" strikes a community, and health authorities seek to restrain its spread by forbidding public assemblages, dismissing schools, etc., the Christian Scientists rise in protest and declare that such an action encourages the epidemic in its attack upon the community by creating in the minds of the people a state of fear and apprehension.

When a child gets sick with diphtheria, if its parents happen to be orthodox Christian Scientists, they are likely to neglect to call a physician, who by one or two injections of antitoxin would with absolute certainty be able to control the disease, and consult instead a modern soothsayer, generally known as a "healer," and the "Christian Science healer" attempts to annihilate disease germs by asserting their nonexistence. To the average mind, such an action is outside the pale of sanity. But a full-fledged Christian Scientist not only asserts the non-existence of germs, but is equally convinced of the unreality of pain or any other bodily ill. Indeed, a toothache is an utter impossibility, for the reason not only that such a thing as a toothache cannot exist, but because the tooth itself does not exist. In other words, a tooth is merely a concept, and a toothache nothing more than a morbid idea.

The mental state which permits a person to harbor such irrational notions is certainly akin to that of the savage mind, which entertains a firm belief in witchcraft and all the harrowing terrors of demonology.

Christian Science will never be accepted by the average thinking man. It is a belated cult. If Mrs. Eddy had lived three hundred years ago, she might have hoped to see her doctrine acquire something like general acceptance, but in these modern days of enlightenment and research, something more is required by the average man than windy reiteration of pleasant but palpably preposterous platitudes upon which to base his beliefs. Christian Science is an anachronism.

A recent number of the *Journal of the American Medical Association* (May 22), under the heading *"Christian Science and Sloppy Thinking,"* makes the following excellent remarks upon this subject:

"A New Jersey salesman, who claims to have been a member of the Christian Science faith for three years, was recently found guilty of manslaughter because he had permitted his 9-year-old daughter, who was suffering from diptheria, to die without medical treatment. The little girl was given treatment—absent and otherwise—by a professional Christian Science practitioner. The man was fined $1,000 and costs. The judge, in imposing sentence, is reported to have said:

"'In the light of the present-day science, which is the result of many years of progressive experiment and demonstration, no one is justified in neglecting the use of such agencies as have been shown to be efficient in the treatment of malignant and contagious diseases, and this is especially true where one is charged with responsibility over the life of another, and particularly of a child of tender years, who has no option but to rely on the common sense and good judgment of its natural protector.'

"The verdict has brought to light, as such verdicts are likely to do, the loose thinking that characterizes so many of the so-called intellectuals of today. Well-meaning people, who deny that they are followers of Mrs. Eddy, have written to the newspapers denouncing the verdict and declaring that it is little less than a crime that a man should be punished for following the dictates of his conscience. The main point stressed by such people seems to be that as children occasionally die of diphtheria under medical treatment, there is no reason for getting excited when a child dies under Christian Science treatment. The argument, of course, is fallacious. The efficacy of the modern scientific medical treatment of diphtheria is not a matter of theory, belief or conscience—it is a matter of fact. Its efficacy is as demonstrable as is the efficacy of the Westinghouse air brake. The parent or guardian who fails to give his child or ward the benefit of modern medical treatment for diphtheria becomes as culpable as a railroad would be if it failed to equip its passenger trains with air brakes. Sometimes, it is true, the air brake fails to avert a fatality; but that is not the fault of the air brake, nor is it any argument for its abolition.

"If an adult in his own right mind wishes to be treated by Christian Science or any other unscientific methods, there can be no objection, provided the disease from which he is suffering may not, through such treatment, become a menace to the community. Children of tender years, however, should not be sacrificed to the distorted views of those who are supposed to be their protectors.

"Religious beliefs should be respected, and in general, they are respected. Where, however, religious beliefs conflict with the general welfare, such beliefs must give way. Presumably, the Mormons were sincere in their belief in polygamy; that particular tenet of their religion, however, had to give way to the more enlightened belief of the community. The Dukhobors that migrated to Canada were undoubtedly sincere in their belief that they should go nude, and the practice of this belief was undoubtedly less of a menace to the community than are some of the bizarre views held by Christian Scientists regarding the cause and treatment of disease. Neverthelsss the Dukhobors had to put on clothes. It is conceivable that we might have transplanted to this country some of the religious beliefs of India, but it is doubtful whether public opinion in the United States would ever look with equanimity on Sutteeism, even though the widows might declare that being burned on funeral pyres of their deceased husbands was a matter of their own personal belief and was none of the concern of the general public. Only a few weeks ago a man in Chicago shot his son with the avowed intention of killing the boy, because he feared the lad was acquiring bad habits and he wished to save the boy's soul. We have not yet noticed any letters of indignation protesting against the man's arrest. Possibly this is because he represents a minority. Should such beliefs ever reach the dignity of a religious cult with money and well-organized publicity machinery behind it, there would doubtless be found many to defend the killing of minors for the purpose of saving them."

# The Tobacconists are Getting Worried

A correspondent of the *Tobacco Leaf* complains that the school physiologies and "Health Lesson" books are teaching the children that "there is more poison in cigarettes than in a rattlesnake." The writer does not complain that the statement is untrue, and frankly admits that "There is more poison in 25 cigars than ...... there is in a rattlesnake." He endeavors to justify his protest, however, by calling attention to the fact that there is also more poison "in a pound of tea than there is in a rattlesnake," and adds:

"The tea caddy is another question and a very serious one, dear ladies of the W. C. T. U. There are any numbers of tea topers whose health is being sadly impaired by the tea habit."

Neither the writer in the *Tobacco Leaf* nor the editor of the journal, who reinforces his complaint by an editorial, attempts to show that the statement made by the author of the school textbooks is untrue, for the writer frankly admits that "alcoholic drinks and tobacco are deadly poisons." What he complains of is that the writer of the text-book does not explain to the children that while there is more poison in a box of cigars than in a rattlesnake, the rattlesnake administers a full dose of poison at once, whereas in the case of a box of cigars, the poison is administered in 25 separate doses.

He also wants to have it expained to the children that cigar smoking is the least harmful manner of using tobacco.

Evidently, we are making progress. Even the tobacco merchant does not longer dare to claim that his product is harmless. Every argument that can be offered for the use of tobacco may be offered for cocaine, opium, hasheesh and every other narcotic drug.

GOOD HEATH recognizes the inconsistencies pointed out by the *Tobacco Leaf* for those who object to the use of tobacco while indulging in the use of tea. Whether tea-drinking or tobacco-smoking is more harmful, depends altogether on the quantity used, and the suceptibility of the individual. The writer has met hundreds of tea and coffee drinkers who were just as uncomfortable without their accustomed cup as is the whiskey toper without his dram or the smoker without his cigarette or cigar. All three classes are dope slaves.

But the fact that tea is a poison and tea-drinking harmful, is no justification for the use or recommendation of tobacco. Just at this juncture a happy thought strikes us. Let the *Tobacco Leaf* retaliate against the ladies of the W. C. T. U., who are making a vigorous onslaught against the tobacco habit, by spreading a campaign against tea-drinking. What a tempest in the teapot we should have if all the smokers should suddenly break loose upon the tea-drinkers and coffee topers. If we can get these false gods stirred up against one another, they may in the end destroy themselves, like the heathen gods of the Pantheon.

J. H. Kellogg

# Self-Poisoning as the Cause of Disease

ALEXANDER BRYCE, M. D.
Birmingham, England.

*(Continued from June)*

## Other Defensive Organs

The thyroid gland is also possessed of a certain amount of toxicolytic power, and this accounts for the fact that in certain very susceptible people it enlarges when its protective powers have been taxed beyond certain limits. A fleshless, antitoxic diet, with plenty of liquid paraffin, is frequently all that is essential to cure a goitre.

In lesser degree the lymphatic glands, the suprarenal capsules and the pituitary body are capable of destroying poisons.

## The Cause of Skin Disease

When all these defenses have been broached, it falls to the organs of secretion, the lungs, salivary glands, skin, bowels and kidneys, to eliminate the poisonous substances from the blood; and there is ample evidence that their powers are brought into requisition with great frequency. Psoriasis, lichen planus, pityriasis, rosea, erythema, eczema, are due to excretion of toxins from the skin, and can be cured by the restricted rice diet introduced by Bulkley. Probably lupus erythematosus, acne rosacea, purpura, and pigmentation of the skin are due to the same cause. Combe specially mentions brenzcatechin, a highly poisonous pigment usually excreted by the urine, as the cause of "liver spots," produced by the action of bacteria upon the animal protein. Urobilin produces yellow pigmentation in the sclerotic or white of the eye, and there are many other colorations, mahogany brown, reddish brown, and so forth, which are due to toxins.

Urticaria is an eruption pretty certainly due to the local presence of micro-organisms, just as the rose spots of typhoid fever are due to the same cause.

Most of these ailments are occasioned by the production of an excessive quantity of poison in a short space of time, so that the defensive powers are unable to cope with them; or it may be to a lesser quantity of poison, with some damage in the organs set apart for the protection of the body. So long as people are willing to live on a low protein, antitoxic diet they are likely to be in much better health and capable of greater endurance than those who subsist on the usual mixed diet of civilized countries. They may not have such a healthy appearance, because their blood vessels are not swollen with excess of nutriment nor their subcutaneous tissues choked with useless masses of adipose tissue, but they are in perfect condition because their tissues are well drained and free from a stagnating excess of lymph and excrementitious material.

## Why Is Disease Universal?

There is no difficulty now in understanding the widespread prevalence of disease, when we realize that the average man is daily charging his alimentary canal and tissues with hordes of harmful bacteria, by which his protective powers are taxed to the utmost in trying to prevent them in gaining a foothold in his body. Life is one continual battle between the body cells and the germs that swarm all around, and in the end the germs always win the battle. But the fewer the hostile germs that are able to exert their poisoning powers the longer it will be before disease and death appear on the scene. Hence, within certain limits, health and longevity are rewards for careful living, because in every case the time eventually comes when the intestinal filter fails, when the liver ceases to destroy poisons, when the glands become exhausted, and the kidneys can no longer keep the blood pure by excreting poisons.

## The Building Stones of the Body

The amino-acids are the final stage in the breakdown of the protein molecule, and luckily for us are quickly absorbed into the blood to be used as the building stones of the body. But so intensely eager are the bacteria to perpetuate their existence that they, with avidity, especially in the absence of a sufficiency of carbohydrates, fasten upon the amino-acids and proceed to decompose them into poisons, which may be, and really are absorbed. We have seen that the bacteria may be divided into two defined classes, the saccharolytes, which feed upon the carbohydrates, producing certain organic acids and inevitably inhibiting the growth of the proteolytic bacteria, probably by the production of these acid substances.

The saccarolytes mainly confine their activities to the small intestine, but in the colon, besides cellulose-digesting bacteria, we have a plentiful supply of proteolytes or protein-digesting bacteria, all of the Bacillus coli class. This B. coli is a normal inhabitant of the colon, capable under certain circumstances of becoming pathogenic or disease-producing, and it belongs to the class of faculative anaerobes, so called because its members can grow in the presence of oxygen.

It is well known that each molecule of protein contains a nitrogenous and a non-nitrogenous or carbonaceous moiety, the latter in the shape of fatty acids, oxyacids being passed to the tissues for the production of energy. The relation of nitrogen to carbon in the protein molecule is 16:52 or 1:3.25; and many diabetics, even on an exclusive diet of protein, can manufacture sugar in the proportion of 2.4 grams of sugar to every gram of nitrogen ingested. Lusk has shown that the sugar production from meat is equal to 58% by weight of the meat proteins metabolized, and contains 52.5% of its total available energy.

Now under anaërobic conditions the intestinal bacteria split off the amino or nitrogenous group, whereas under aerobic conditions they split off the carboxyl or carbonaceous group. This splitting off of the carboxyl group as $Co_2$ is performed by the carboxylase or saccharolytic bacteria and may take place either before or after deamidization (i. e. the splitting off of the amino group).

If it happens after deamidization, the toxins produced are not among the virulently poisonous class, and hence their effects do not arise instantaneously. For this reason they are apt to be ignored and treated as of no consequence, but we shall see presently that this view is untenable. There are eighteen or more amino-acids, including glycine, alanine, serine, valine, leucine, asparagine, aspartic acid, glutamic acid, phenyl-alanine, tyrosine, tryptophane, lysine, ornithine, arginine, cystine, proline, and oxyproline, but only the toxic products from a few have been carefully studied. Thus, from tyrosine are formed phenol, praracresol and others which are combinations of phenol with acetic and pro-pionic acids. From tryptophane are formed more poisonous acids, which finally degenerate into indol and skatol, and there is sore doubt as to whether the putrefaction of tryptophane does not take place after deamidization, in the sinister way about to be described.

## The Index of Putrefaction

These four bodies are undoubtedly absorbed into the blood, where they mostly combine with sulphuric acid or glycuronic acid—formed as already mentioned by the liver—and are excreted as salts of these acids. Hence the "ethereal sulphates," as they are called, are regarded as the index of the amount of intestinal putrefaction, and no doubt with some degree of truth. But the truth has not all been told when this index has been estimated, because the damage done to the tissues in manufacturing ethereal sulphates out of more toxic parent bodies cannot be estimated. Yet the liver, the kidney, the muscles, the blood and the brain, in the order named, all take their part in this process of transformation, at what expense to their integrity and stability, has not been appraised.

Some of these bodies which have not been absorbed—the indol and skatol particularly—are excreted by the feces, giving them their characteristic odor—an odor so offensive that had it originated in, or in the neighborhood of, our houses, it would quickly have been made the occasion of a complaint to the sanitary authorities. And yet one is compelled to live and move and have his being with this decomposing mass passing its poisonous putridity into the blood.

## Evil Effects of Indol

Now hear what the scientists have to say about these substances. Indol, they say, is not very toxic, yet when from .025 to 2 grams per day are administered to a perfectly healthy man it causes frontal headache, irritability, insomnia, and confusion. Continued absorption sufficient to cause its excretion in the urine as indican causes neurasthenic symptoms. Repeated injections of indol produce hypertrophy of the adrenal glands, the little cocked-hat shaped organs lying above the kidneys themselves, while there is some doubt whether arteriosclerosis does not thereby result. Indol and skatol cause the muscles to react to stimuli like fatigued muscles.

All this is admitted; it is the result of actual experiment, but as normal urine only contains 12 milligrams of indican, an infinitesimal quantity as compared with the above doses, it is considered that no possible harm can result. Twenty times this quantity has been injected into the blood stream of a nine-pound dog with no bad results. Personally, I do not regard this evidence as a complete indication of the innocence of indol, because it does not take into account the continual, though infinitesimal, harmful effects upon the tissues, a drama which is perpetually being enacted. No doubt in the best possible conditions of healthy open-air life the harmful effects may be delayed, but they are only postponed. Yet Mellanby states that "the indol derivatives are all relatively innocuous compared with other substances formed in the alimentary canal."

## A Cause of Insanity

A derivative of indol called indol-acetic-acid may be present in normal urine in very small quantities. But one investigator found in only twenty-one per cent of healthy persons, whereas he found in 48 per cent of cases of dementia præcox—a form of insanity. Another putrefactive product of the colon bacilli in the large intestine has been termed ergamine, and this also has been regarded as the cause of dementia præcox. These facts are most significant, because one would like to know at what stage the healthy sane person, in whose urine one of these substances may be found, which means that he can tolerate it in his blood—might be expected to pass quietly over into the realm of the insane.

These substances are usually formed in the colon, but infection of the small intestine with coliform organisms may be inferred when indoxyl (indican) indol-acetic-acid or hydroxyphenyl-acetic-acid appear in the urine of a constipated person whose gastric secretion is not deficient in hydrochloric acid.

## More Virulent Poisons

We come now to consider the formation of a much more poisonous set of substances, those which are produced by the carboxylase (saccharolytic) bacteria, removing the carboxyl group from the protein molecule before the amino group has been removed, the result being the production of ptomains. These are crystallizable nitrogen-containing bases which are very similar to vegetable alkaloids such as strychnine and muscarine. They are allied to leucomaines, and large numbers have now been isolated, some of them very poisonous and others quite harmless. Many cases of food poisoning are erroneously attributed to the presence of ptomains, but it is seldom that they are the offenders. Much more commonly virulent germs such as the Bacillus enteritidis of Gærtner—an organism of the coli-typhoid group—sometimes found in the flesh of diseased animals, or the Bacillus botulinus—an anærobic spore-bearing germ found in hams, game pies, raw sausage and fish, are the most direct cause of the poisoning.

Many of the ptomains such as methylamine found in herring brine, ethlyamine in beet sugar, trimethylamine in putrid fish and sausage, are non-poisonous; some, such as neurine and muscarine are intensely poisonous; others, such as butylamine from cod liver oil and gadinine from putrefying fish, are only poisonous in large quantities.

On the other hand, mytelotoxine, the cause of mussel poisoning, is intensely poisonous and has produced death many times in those who have eaten infected mussels, because it is not destroyed by cooking, as many ptomains are. Tyrotoxicon, another ptomain is found in ice cream, cream puffs, and even in ordinary cheese, which is swarming with manifold kinds of germs. In 1905 an outbreak occurred in Birmingham clearly due to ice cream, and fifty-two cases in all were traced to this source.

## Their Effect on the Blood Pressure

This decarboxylization (i.e. loss of $CO_2$) occurs only under anærobic conditions, and the most important of these products of protein putrefaction are termed pressor bases, because like epinphrine they tend to raise the blood pressure.

From phenyl-alanine phenyl ethylamine is formed.

From tyrosine we have para-hydroxyphenylethylamine (Tyramine).

From histidine, an important building stone among amino-acids, we have Bimidazolylethylamine (Histamine.) This last is now well kown as the direct product of the Bacillus aminophilus which is found in the static (stagnant) ileums of those who suffer from subnormal blood pressure, 97 to 110 m.m. Hg.

From leucine is formed isoamylamine.

All these are potent poisons, the first two and the last stimulating the involuntary muscles and raising the general blood pressure, whilst histamine lowers it. By giving small quantities of tyramine and isoamylamine to animals over prolonged periods, these substances have been proved by Harvey to produce arterio-sclerosis and a renal condition resembling the large white kidney.

Tyramine and histamine are both present in ergot, and tyramine is also to be found in the salivary glands of cephalopods, where it functions as a venom paralyzing the prey.

The absorption of small quantities of histamine produces marked vaso-dilation, and lowers the coagulability of the blood, while in larger doses serious nervous symptoms with profound collapse supervene.

Fortunately all these substances are said to be detoxicated by the liver by a process of deamidization and oxidation. Hence when swallowed or formed in the colon they probably do no harm. But it is somewhat disconcerting to discover that histamine has been isolated from the intestinal mucous membrane of normal oxen and that a faulty diet is responsible for its formation. A cat that has lived on an exclusive meat diet was found to have the bacillus aminophilus higher up the intestinal canal, quite close to the stomach, than a cat fed on a milk diet.

It is quite clear therefore that this virulent poison may lie dormant in a perfectly healthy intestinal canal, and if it be absorbed by an abraded mucous membrane it may be destroyed by the detoxicating power of the liver, if this power has not been lost. Allan C. Eustis, of Tulane University, New Orleans, mixed a solution of histamine with pulped turkey buzzard's liver, and found that it had lost its toxic properties thereby.

### A Cause of Asthma

It is not impossible for toxic substances to be formed outside the portal territory, and thus they may be absorbed into the blood, even if they do not cause local effects in the tissues where they were formed e.g. the bronchi. The effects resemble what is known as anaphylactic intoxication, .5 mgr. of histamine throwing the bronchial musculature of guinea pigs into profound contraction, with distended lungs and death. Eustis boldly declares that bronchial asthma is always due to histamine. He has not succeeded in finding the base in the blood in any of his asthmatic patients, but has isolated it from the stools of three out of fifteen of them. He suggests that asthmatic persons have lost the power possessed by normal people of detoxicating this normal product of pancreatic digestion and putrefaction in the intestinal canal.

Urticaria is one of the signs or effects of anaphylaxis—which may be stated to be exaggerated susceptibility to a foreign protein—and a solution of 1:1000 of histamine will produce urticaria on a scarified area of skin. Doubtless putrefaction of undigested residues of flesh in the intestinal canal is frequently responsible for the production of urticaria in man. Histamine is said never to be produced in the presence of carbohydrates and acids.

Mr. J. Burdon Cooper states that tyrosin was present in both the lens and the aqueous humour in every case of senile cataract he has extracted. This agrees with the experience of Mr. Ernest Clarke, who has demonstrated that premature hardening of the lens is a very constant sequel of chronic intestinal stasis.

### Rheumatism and Its Cause

Very few medical men now doubt that most forms of arthritis, including rheumatoid arthritis, are due to the absorption of some toxin, and many of them can be directly traced to intestinal toxæmia. It is the experience of more than one specialist that efficient lavage of the colon can cut short an attack of arthritis when previously all the more usual methods of treatment had failed.

Fibrosites and kindred disorders such as lumbago, neuritis and muscular rheumatism can in many cases also be directly traced to absorption of toxins from the digestive apparatus. Most medical men never hesitate to associate pyorrhoea alveolaris with the causation of rheumatism, but it is now well recognized that this disorder is itself secondary to colitis, which is a direct result of chronic intestinal stasis.

A point worth remembering is that the ductless glands cannot exercise their undoubted toxicolytic power without themselves become hypertrophied, thereby subjecting the body to the effects of this hypertrophy. In most cases this means exaggeration of function, so that in the case of the supra-renal glands we may look for an increased secretion of adrenalin, a continued high blood pressure, and ultimately arterio-sclerosis and granular kidney. Metchnikoff, Herter and others have attested that indol and skatol—products of the colon bacillus—cause atheroma or degeneration of the blood vessels, especially of the aorta near the heart, and this condition has been observed by roentgenologists in cases where a bismuth meal has demonstrated the presense of chronic intestinal stasis.

Sir Lauder Brunton used to say that the bacillus coli had a special power of producing fatigue poisons, and this harmonizes with the views of specialists in mental diseases, that chronic intestinal stasis accentuates such symptoms as apathy, irritability, perverted moral feelings, melancholia, mania, hypochondria and a condition of worry sufficient to make people almost demented.

### Poisons Produced by Animal Fats

For our present purpose it is quite unnecessary to enlarge further on the byproducts of the putrefaction of protein or to enumerate the large number which have already been isolated. It will be more appropriate to introduce another aspect of the auto-toxæmic problem by pointing out that the decomposition products of fats and carbohydrates are not always absolutely harmless. In particular, animal fats in large quantity undoubtedly promote intestinal putrefaction, while their end-products may leave highly irritating acids like butyric acid. This has a strong rancid odor and is not only poisonous itself but is capable of giving rise to still more highly poisonous substances. In children these by-products may be so irritating as to cause cyclic vomiting.

From lecithin, which is a phosphorized fat found in the yolk of eggs, a substance called choline is formed. This may ultimately degenerate into neurine, which is allied to muscarine; and these substances are not free from the suspicion of being capable of causing epilepsy and other troubles of a serious nature. No one suffering from mental depression should ever eat eggs, especially at breakfast.

Both fats and carbohydrates, but particularly the latter, set up fermentation, during which the whole range of fatty acids from formic to valerianic, may originate, as well as the oxyacids, lactic, succinic, oxybutyric. In addition to these, oxalic acid, acetone, ethylalcohol, $CO_2$, $CH_4$, $H_2$, may arise. These are mostly absorbed by the intestine and oxidized into carbonic acid and water, although they are liable at times to irritate the mucous membrane of the bowel and set up diarrhea.

Oxaluria may also arise from excessive gastric fermentation of carbohydrates, although it is more likely to emanate from the excessive destruction of purins contained in flesh foods or from oxalic-acid-containing foods like sorrel, rhubarb, tea and coffee.

(*To be continued*)

# A Native Meal in Bolivia

W. E. Safford, when acting as the World's Columbian Exposition Commissioner to Peru and Bolivia, in 1881, had an experience which he thus describes in the Report of the Nineteenth International Congress of Americanists:

"Night coming on, we have been obliged to stop at this little village, or rather collection of Indian huts. I am seated on the floor of a small adobe house whose only occupants beside myself are two Quichau Indians, brother and sister. . . . The sun is setting. The shepherds are driving home their flocks of sheep and llamas from the slopes of the surrounding hills. I can hear the bleating of the lambs and the weird tunes the shepherds are playing on their *quenas,* or flutes. . . .

"The young woman is preparing the evening meal. I watch her with the greatest interest, as though transported back to the time of the Incas, whose graves I have been opening. All the cooking utensils are of pottery almost identical in shape with those we have dug up at Ancon. She takes down several bunches of *quinua,* the seeds of which bear a certain resemblance to turnip seed. She has heated an earthen jar over the fire. The fuel is *taquia,* or llama-dung; the stove is of clay. Into the hot jar she pours the dry seed and stirs it with a roughly carved wooden spoon. The seed in parching crackles like corn.

"Now she has taken it off the fire and has poured it into an open flat-bottomed vessel. Imagine my surprise to see her jump into the vessel on top of the parched seed, on which she dances up and down with her bare feet until the husks are loose from the seed. Now she takes the seed to an open place near the hut where is a current of air. She spreads a piece of cloth on the ground and slowly pours the seed upon it from as great a height as she can hold the jar. The wind blows away the dust and husks, the quinua is winnowed.

"She has now returned to the house and washes the seed three or four times, after which she empties it into a pot of boiling water over the fire. This water she changes again and again with water boiling in another pot. Then she takes the quinua off the fire and washes it a dozen times, rubbing it vigorously between her hands and changing the water repeatedly, in order my guide informs me, to take away its bitter taste.

"Finally, the seed is put upon the fire once more, where it is now boiling briskly. I suppose I shall have to eat it, notwithstanding the process of its preparation (the lady's hands and feet did not seem to me to be immaculate). It is now dark. As the hut has no chimney, the smoke from the burning llama-dung is stifling. For a light we have a shallow earthenware saucer into which tallow has been poured and a wick inserted and allowed to cool. Nothing more primitive can be imagined.

"My hosts do not speak even a word of Spanish; their language is that of their ancestors, and the utensils and fabrics in the house might have been dug up from a prehistoric grave. The smoked rafters above me are the inner axes of cactus stems all pitted with scars where the spines once grew. The thatch is of *ichu* grass.

"Supper is now announced, and I have before me a dish of snowy quinua, with the beautiful spiral embryos of the seeds half uncoiled as they burst from their covering. The quinua tastes very much like oatmeal, or perhaps like grits, and with the addition of some tinned meat I have brought makes a very satisfactory meal for myself and my Indian hosts."

# In the Course of the Day's Work

The following interesting paragraphs appeared in a recent issue of the *Journal of the American Medical Association:*

"An interesting though not unique case is described in a recent bulletin sent out by the Federal Board for Vocational Education. Among the blinded ex-service men was a negro, who seemed to be blind in both eyes. Neither eye could perceive five fingers at any distance. He had faint light perception and there was hope for sight restoration in one eye. The man was about to be assigned to a workshop for the blind when a physician managed to persuade him that he was not blind. The report of the case reads:

" 'He was suffering from psychoneurosis hysteria, giving rise to marked blepharospasm and photophobia and amaurosis. All physical findings negative. Treatment by suggestion completely cleared up all symptoms and I discharged this man cured.'

"This case is not referred to because it is unique in medicine, for, as physicians know, it is not. Had the man regained his sight, however, while under 'Christian Science' treatment or while having his vertebrae pushed by a chiropractor, what a to-do would have been made of it. The case would have become a classic in the annals of the cult. As it is, the incident would never have reached the public eye had it not been for the bulletin of the Vocational Educational Board."

# Does Sugar Sweeten Life?

H. M. STEGMAN

The one subject which oftenest comes to the fore in conversation nowadays is that which is known in abbreviation as the H. C. of L. Among all the soaring prices, that of sugar keeps well above the rest. From a basis of perhaps six cents a pound a few years ago, the figure is now twenty, thirty, thirty-six or even more. Indeed, you might almost call it priceless, since you cannot ordinarily buy it if you offer one dollar a pound. To most persons, this is a grievous situation. Are there not, however, mitigating considerations to be sought and found?

The consumption of sugar in the United States in 1919 was about 92 pounds per capita. This marks an increase from 85 pounds a few years ago. Half a century ago, the figure was 35 pounds. These amounts are far in excess of those reported in the European countries. In the common acceptance of the term, sugar is one of the necessaries of life. Strictly speaking, this is not true. Only an infinitely small proportion of the people who have lived on this earth have tasted this article. Mention of it goes back to 325 B. C, although it appeared first in Europe nine hundred years later. Some centuries after, it was still so rare that peddlers carried candy from country to country on their backs, selling small morsels of it for large prices. It was first brought to England about 1546.

Beer and whiskey are still regarded as necessaries in other countries, but the United States is getting along very well without them. Would life still be worth living if no more sugar were to be had? Of course, no one would even suggest the prohibition of this food, but we may at least inquire if the curtailment of its use would be such a terrible calamity.

Tests by scientists show that sugar in considerable quantities causes gastritis. In moderate amounts, this result is not discernible, but other indictments may fairly be brought against it. The uses of this product may be described as moral, quasi-moral and wholly immoral. Some canned fruits are not palatable without it. In summer there is a large demand for sugar for putting up berries and fruits, as it not only improves their taste but lessens the likelihood of spoiling. However, if modern methods of canning are carefully followed, these delicacies can be kept sterile without the addition of this highly prized substance. Sprinkling it on cereals or putting it into beverages at meals is not seriously objectionable in moderation; it is, however, commonly and harmfully employed to cater to the great American cocktail habit.

A cocktail is primarily an alcoholic drink impregnated with some stimulating decoction known as "bitters." It is taken before eating to induce an appetite denied by Nature. Sugar is similarly used in puddings, pies, pastries, cakes and the like to render them more palatable and thus to induce an enlarged consumption of them. If Nature were left to herself, she would arrange this matter of hunger in rather a satisfactory fashion. But when, through over-eating or under-exerting, we find ourselves at meal-time with little or no inclination for food, we set about to bribe or cheat our stomachs with alluring combinations. We reach a stage in our dining where bread and butter would tempt us not at all, but a dish of ice cream and a chunk of chocolate cake certainly look good. Nature can only scowl and take a vengeance which some day will fall on those who continually flout and scout her.

Sugar leads to a large use of fruits in their cooked state which would better be eaten raw on account of the vitamins which they then contain. Most apples are delicious as they come from the tree. It is doubtful whether they are really more agreeable to the palate when concocted into a pie, pudding or cobbler. The housewife would be less overworked, and so would be the stomachs of her family, if she served fruits raw as much as possible, instead of employing them as a basis for elaborate culinary "triumphs."

Were candy confined to meal-time, it would be bad enough, for in general it means the intake of more nourishment than the body requires. Hence come auto-intoxication and in many cases that unctuous disease known as obesity. But too frequently fudge, chocolate creams and the hundred and one other forms taken by the tempter, are regarded not as an article of diet but as an amusement to be indulged in at any time that the box is passed around. This may be set down as an absolutely immoral use of sugar. Similar irregular consumption of ice cream in its various guises, with cake, soda-water and kindred beverages, which would never find a buyer but for the sweetening they contain, is a further tax on the health.

While the housewife is unable to secure sugar for her family, the wholesale confectioner apparently has a big supply. By the addition of some coloring matter and flavoring extracts, with manipulation into attractive forms, and the decorative appeal of paper lace and a fancy box, he deftly multiplies the price of the substance by ten. When there is such an under-production of articles greatly needed, this economic waste is certainly deplorable.

Groceries and other shops in residence districts which sell candy, are visited daily by lines of children with pennies to spend. Their first impulse on receiving a coin is to exchange it for sweets to be consumed on the way home. Parents seem to regard this practice as amusing. A healthy child's stomach has capabilities which arouse a dyspeptic's envy, but that is no reason for allowing him to abuse the organ. Furthermore, this custom of expeditious expenditure allowed or even encouraged in young children, fastens to them as they grow older, and inculcations of thrift fall on dull ears.

Wrong habits sometimes travel in circles. Heavy eaters of meat in certain cases have a craving for candy. The body being overcharged with protein, Nature seeks to restore the equilibrium by suggesting carbohydrates. Sugar is composed wholly of these and, being likewise so tempting to the palate, is the obvious recourse. When the balance between protein and carbohydrate is thus restored, the gourmand is again ready for a big spree on meat, to be followed with another debauch on candy.

It should be borne in mind also that cane and beet sugar are not, strictly speaking, natural foods. The sugar beet is a most delectable vegetable. It may be eaten with benefit because the sugar content is comparatively small and its cellulose and mineral salts are helpful. To extract the sweetness and then to eat only that, is like throwing away skim milk and feeding a calf wholly on cream.

A general curtailment of the use of sugar would bring down the price. Must we not admit that it would not be without other advantages?

# The Teeth In Ancient and Modern Times

The *New York Medical Journal* in an interesting editorial tells us that the "old Etruscans evidently had good dentists, for bridge work in gold has been found in their ancient tombs in Italy (from 800-600 B. C.) and they used gold caps for teeth, while as early as 450 B. C. the laws of the twelve tablets at Rome forbade the burying of gold with a corpse—they were conserving their gold in Rome nearly 2,500 years ago—except such gold as was fastened to the teeth. This was the explicit exception which clearly indicated that the use of gold in the mouth must have been rather common.

"Dentistry is then a very old art, but is of course entirely a new invention in the modern time, mainly due to American enterprise and ingenuity. It is therefore of all the more significance that we should face clearly the failure up to this point to make and keep the teeth of mankind in better condition than before. It was not an uncommon thing for men and women a generation or two ago—men particularly, more rarely women because of the destructive effect of childbearing on the teeth—to go to their graves with all their teeth. Some of the men of past generations lived to old age with all their teeth in good condition. They never had a toothache. Their teeth were worn down by the vigorous chewing of the rather tough and harder foods that the poor particularly were accustomed to eat in the older time—stale bread, raw turnips and cabbage, uncooked carrots and meat that had not been refrigerated but was eaten within a week of killing, and all the rest. The enamel had been worn away on the crowns, but the dentine had hardened, as it does in the animals, and so they had no decay and a perfect set of teeth.

"I need scarcely say that they had never used a tooth brush; indeed I doubt whether they had ever seen one. It was a question of preservation entirely by natural cleansing processes and not at all by artificial auxiliaries. Curiously enough these experiences which I am sure could be duplicated in the memories of a great many physicians whose grandfathers came to this country after having lived the lives of hard-working farmers in various parts of Europe, is exemplified from very early days in history. Altogether, we have some hundreds of skulls from the New Stone Age—that is, of men who used polished and rather well finished stone implements and who lived at least some six or seven thousand years ago. In all these hundreds of skulls there is not a carious tooth to be found. Numbers of these have the enamel worn, manifestly by hard chewing, but their healthy dentine had responded well to the pressure exerted on it and had hardened into a resistive vitality that thoroughly protected them. A rather similar state of affairs is found among the Egyptian bodies. None of the children's skulls show any caries of the teeth, though it goes without saying that the Egyptian children present much better teeth than the children of our time. It is extremely rare to have to look into the mouth of a child without finding that its first or milk teeth are carious in many places and sometimes most of them are sadly decayed.

"Manifestly the trouble is with the habits of mankind in the matter of chewing. The teeth have now become a subject of serious solicitude for the physician, and more teeth have been pulled from the mouths of well-to-do patients during the past five years than during a whole generation before that. What we look to in our time is preventive medicine and we would gladly welcome anything that will prevent this destruction and necessity for the removal of the teeth. Manifestly this is to be found in the putting back into the diet of things that are hard to chew and that require vigorous effort, which adds to the vitality of the gums and thoroughly cleanses the teeth. An Italian peasant eats black bread a week old that would seem almost impossible to an American, but such a vigorous chewing obviates the necessity of the tooth brush and does more to keep the teeth clean than anything that could be done. The eating of raw foods and fruits which have been eliminated from the diet has a similar beneficial effect.

"Here are the problems that are before this generation if we are to improve the condition of the teeth and have preventive medicine accomplish as much for these important organs as it has done for so many others. Tooth decay has reached such a climax of destructiveness and danger to other structures in the body that it is time to be ready to review the whole subject of the care of the teeth apart from prejudice and customs so as to initiate a movement that will serve to save the teeth of the next generation at least. To know that there is a problem, however, is of itself very sufficient to bring minds to fruitful thoughts of its solution. Certainly the man or group of men who will start something that will make tooth conditions better will confer a great benefit on mankind and will reap no little and deserved prestige."

# International Anti-Tobacco Congress

A call has been issued for an International Anti-Tobacco Congress, which is to be held in Copenhagen, Denmark, the end of July. The call is signed by Anton Schmidt, who is the editor of the *Fresk Luft* ("Fresh Air"), and whose address is Baldersgrade 4, Copenhagen. This Congress is to be held in connection with the meeting of the International Order of Good Templars, many of the members of which are opposed to tobacco as they are to alcoholic drinks.

According to an item in the quarterly organ of the German Anti-Tobacco League, published under the title *Der Tabakgegner,* an International Anti-Tobacco League was formed May 22, 1914, by representatives of the Anti-Tobacco Societies of Germany, Austria, Denmark and Sweden. The organization was effected in Dresden, and a Danish physician, Dr. Bille-Top of Copenhagen, was elected president. The war, of course, made all international gatherings for the time impossible, and the death of its president in June, 1916, also seriously affected the movement. The enormous increase in the tobacco habit which showed itself during and after the war in practically all countries has led to a widespread protest and brought about a revival of the project for joint action. It is expected that, in addition to the countries mentioned above, Switzerland, Holland and Norway will be represented, and probably other countries.

The article in question says: "Every one who is at all familiar with the condition in the tobacco trade knows how the egotistical business men of the different countries, even of those which in the world war were fighting each other, are working harmoniously together in order to enrich themselves at the risk of the health, morality and well-being of their own compatriots. It is important to raise a strong dyke against this world-wide menace."

# The Health Habits of the Kamtchadals

In his delightful book, "Tent Life in Siberia", George Kennan tells us that "the Kamtchadals depend mainly for subsistence upon the salmon, which are dried and eaten without salt, in the open air.

"Bread is now made of rye, which the Kamtchadals raise and grind for themselves; but previous to the settlement of the country by the Russians, the only native substitute for bread was a sort of baked paste, consisting chiefly of the grated tubers of the purple Kamtchatkan lily. The only fruits in the country are berries and a species of wild cherry. Of the berries, however, there are fifteen or twenty different kinds, of which the most important are blueberries, *maroshkas,* or yellow-cloud berries, and dwarf cranberries. These the natives pick late in the fall, and freeze for winter consumption. Cows are kept in nearly all the Kamtchadal settlements, and milk is always plenty. A curious native dish of sour milk, baked curds, and sweet cream, covered with powdered sugar and cinnamon, is worthy of being placed upon a civilized table.

"The dress of the Kamtchadals in winter and summer is made for the most part of skins. Their winter costume consists of sealskin boots called *torbassa,* worn over heavy reindeer stockings and coming to the knee; fur pants with the fur inside; a fox-skin hood with a long fringe of wolverine hair, ornamented with the animal's ears; and a heavy *kookhlanka,* or double fur over-shirt, covering the body to the knees. This is made of the very thickest and softest reindeer skin of various colors, ornamented around the bottom with silk embroidery, trimmed at the sleeves and neck with glossy beaver, and furnished with a square flap under the chin, to be held up over the nose, and a hood behind the neck, to be drawn over the head in bad weather. In such a costume as this the Kamtchadals defy for weeks at a time the severest cold, and sleep out on the snow safely and comfortably in temperatures of twenty, thirty and even forty degrees below zero, Fahr."

### Getting Drunk on Toadstools

The newspapers recently reported a case of intoxication in Muskegon County in which the person claims that "he got drunk on toadstools and quite unintentional."

This form of intoxication, quite unusual in this country, is the ordinary method of getting drunk among the Koraks. Mr. Kennan describes a Korak wedding and adds a description of the effects of the toadstool intoxication in which this primitive people indulge.

"After the conclusion of the ceremony we removed to an adjacent tent, and were surprised, as we came out into the open air, to see three or four Koraks shouting and reeling about in an advanced stage of intoxication—celebrating, I suppose, the happy event which had just transpired. I knew that there was not a drop of alcoholic liquor in all Northern Kamtchatka, nor, so far as I knew, anything from which it could be made, and it was a mystery to me how they had succeeded in becoming so suddenly, thoroughly, hopelessly, undeniably drunk. . . . . . The exciting agent, whatever it might be, was certainly as quick in its operation, and as effective in its results, as any 'tanglefoot,' or 'bottled lightning' known to modern civilization. Upon inquiry we learned to our astonishment that they had been eating a species of the plant vulgarly known as toadstool. There is a peculiar fungus of this class in Siberia, known to the natives as *muk-a-moor,* and as it possesses active intoxicating properties, it is used as a stimulant by nearly all the Siberian tribes. Taken in large quantities it is a violent narcotic poison; but in small doses it produces all the effects of alcoholic liquor. Its habitual use, however, completely shatters the nervous system, and its sale by Russian traders to the natives has consequently been made a penal offense by Russian law. In spite of all prohibitions, the trade is still secretly carried on, and I have seen twenty dollars' worth of furs bought with a single fungus. The Koraks would gather it for themselves, but it requires the shelter of timber for its growth, and is not to be found on the barren steppes over which they wander; so that they are obliged for the most part to buy it, at enormous prices, from the Russian traders. It may sound strangely to American ears, but the invitation which a convivial Korak extends to his passing friend is not, 'Come in and have a drink,' but, 'Won't you come in and take a toadstool?'

"It is but just to say, however, that this horrible practice is almost entirely confined to the settled Koraks of Penzhinsk Gulf—the lowest, most degraded portion of the whole tribe."

### The Useful Reindeer

The Siberian Koraks could hardly survive in their rugged and barren climate without the aid of the reindeer. Says Mr. Kennan: "Besides carrying them from place to place, he furnishes them with clothes, food and covering for their tents; his antlers are made into rude implements of all sorts; his sinews are dried and pounded into thread, his bones are soaked in seal oil and burned for fuel, his entrails are cleaned, filled with tallow and eaten; his blood, mixed with the contents of his stomach, is made into 'manyalla'; his marrow and tongue are considered the greatest delicacies; the stiff, bristly skin of his legs is used to cover snow-shoes; and finally his whole body, sacrificed to the Korak gods, brings down upon his owners all the spiritual and temporal blessings which they need.

"It would be hard to find another animal which fills so important a place in the life of any body of men, as the reindeer does in the life and domestic economy of the Siberian Koraks. I cannot now think of one which furnishes even the four prime requisites of food, clothing, shelter and transportation. It is a singular fact, however, that the Siberian natives—the only people, so far as I know, who have ever domesticated the reindeer, except the Lapps—do not use in any way the animal's milk. Why so important and desirable a food should be neglected, when every other part of the deer's body is turned to some useful account, I cannot imagine. It is certain, however, that no one of the four great wandering tribes of Northeastern Siberia, Koraks, Chookchees, Tungoos, and Samootkees, uses in any way the reindeer's milk."

# The Cost of Sickness

According to a computation made after careful investigation by the United States Government, the workng people of the United States lose every year two hundred and seventy million working days through sickness. This is equivalent to more than nine hundred thousand years, and in a century to ninety million years.

Consider for a moment the enormous economic waste involved in this loss of time. Basing our estimate upon the present prices of labor, the amount of time lost through sickness reaches an aggregate of more than one billion dollars annually; and nearly all this sickness is due to ignorance and is easily preventable.

# For Your Health—Make a Garden

R. V. ASHLEY

(FOURTH ARTICLE)

July is the noontide of the year. Where June ends and July begins, who knows? And yet one who lives with out-of-doors, as every garden lover ought, may read the month by all the senses, without reference to calendar or other mechanical measure of passing time. July means summer at its best. We know it by its days of shimmering heat, its roads of dust, its heavy morning dew, its sense of limpid, langorous lassitude, its sticky lethargy, by the humming of bees and the whir of myriad other insects; by its periods of drought and by its heavy thunder-storms.

"The year is not yet old; the night is brief,
The daylight scarcely to the sense abridged;
The mighty trees still robed in lustrous green,
With scarce a tinge of fading or decay,
And Nature's glory is as yet undimmed."

But isn't it strange, though, that, with most people, even those who have been most enthusiastic in the spring, active garden work comes to a standstill at this time of the year, when our gardens are, on the whole, at their very best? We seem to become possessed of a kind of midsummer madness, a relic of the old traditions of making garden in the spring once for all and then having done with it.

An amateur who thought that all planting ceased with May would be likely to believe that all garden work should cease by the first of July. But the real, live, wide-awake gardener who finds delight in every garden operation and from them all reaps richer blood, a ruddier skin, a healthier glow, and greater well-being generally, knows that July is rich in gardening opportunities and improves them every one.

During this month your table should be abundantly supplied with tender, succulent young vegetables from your early sowings. Besides radishes and lettuce, which should be always available from early May to October, you should be harvesting before the end of July snap beans, both the green-podded and the wax or yellow-podded sort, parsnips, carrots, beets, early cabbage, peas, tomatoes, sweet corn, kohl-rabi, turnip, kale, endive, mustard, chard, New Zealand spinach and other greens, summer squash, cucumbers, and possibly even extra early muskmelons which have been somewhat coddled and therefore kept growing continuously since planting.

## Work in the July Garden

The most important work of the month is thinning, weeding and cultivating, and harvesting. Half the time and nearly all the backache may be saved by using a wheel hoe, a weeder and mulcher, or hand disc cultivator for stirring the ground. There is also abundant opportunity for transplanting in July in both vegetable and flower gardens. Wherever there is a vacant space in the vegetable rows not otherwise occupied, stick in a cabbage plant, a tomato plant or some other equally desirable utilitarian. As soon as one crop is out of the way, clear the ground, add fertilizer, and rework the soil. Then plant some succession crop. Indeed, better vegetables for winter storage, as well as for fall use, may be raised from seeds planted in June and July than from earlier plantings which, if left in the ground until time to store them, may become tough, woody and flavorless.

Continue successive sowing of beets, to provide a supply of young tender roots after the first supply has become woody and lost its sweetness, Detroit Dark Red, Edmands Blood and Black Red Ball are standard sorts. These are early varieties with little foliage, and flesh of a deep, rich color.

If you are to have tender, brittle bush beans during August and September, make small plantings every week or ten days, using only the better varieties. These will include bountiful, refugee, stringless green pod, and butter, which represents the highest in quality and productiveness. If your garden plot is small, it may be wise to fix on some one variety and use it all through the season.

Many prefer the yellow or wax-podded varieties to the green-podded sort. The yellow-podded varieties really do better than the others during warm summer weather, and are not so likely to rust as when planted earlier.

If your garden space is limited, some of the better varieties of pole beans will be found most economical of space, especially for August and September cropping. The Scotia is recommended as a wonderfully prolific pole bean of superfine flavor. Early plantings of this bean will begin in late July or early August and continue until frost. The Family bean bears wonderfully heavy crops, single pods sometimes reaching the enormous length of six or seven feet. One hill of this bean, it is said, will furnish all that a family can use. It bears throughout the summer without interruption until killed by frost. The Japanese Sword bean resembles the lima in habit of growth and form of bean. It is easy to raise, and bears pods ten inches in length and nearly two inches broad. They are best for table use when half grown, have a distinctive flavor and are particularly meaty.

Carrots are achieving popularity, possibly because we are becoming educated to demand them freshly gathered when young and tender. Successive plantings should be made in July. Danvers, with a blunt top, and the Saint Vallery, which tapers to a slender point, and half long scarlet stump rooted, which is slender, highly colored and nearly even in diameter throughout its length, are most excellent varieties for late sowing.

By the end of the month, the main crop of cabbages should be transplanted to permanent quarters. Early Jersey Wakefield is the earliest variety. It produces a conical head, is very sweet and well flavored. The Danish Ballhead is the finest all-around late cabbage. It produces enormous, solid heads of purest white centers. Perfection Drumbead Savoy is a quality cabbage, fine for main crop, but strange to say, raised by comparatively few gardeners. It has a distinctive flavor that is very palatable and makes fine salads as well as an excellent cooked vegetable. The foliage of the Savoy Cabbage is crimped or finely wrinkled.

The final transplanting of cauliflower also should be made this month. Cauliflower plants are of larger growth than cabbage and should be set correspondingly farther apart. Extra early dwarf Erfurt is the best type. Dry Weather, Snowball, Snow Storm, etc., are selected strains of the type.

Early varieties of sweet corn for fall use should be planted once a week during July. Golden Bantam, Seymour's Sweet Orange, Golden Giant, Plentiful, and Black Mexican are all excellent varieties for July sowings.

Kohl-rabi develops in about eight weeks, hence should be sown every two weeks to provide a succession of tender bulbs for table use. In flavor it is something of a combination of cabbage and turnip, but more delicate than either. Once used, you will always have it in your garden. The plants may be started in a seed bed and transplanted so as to stand eight to ten inches apart in the row when they show the fourth leaf. The bulbs should be used when from two to three inches in diameter while the skin of the upper portion is still soft and tender. Early White Vienna is the most favored variety.

Lettuce for summer use is something of a problem; but several plantings should be made during July. However, a wise choice of varieties and good culture will ensure delicious, crisp leaves or heads through the hottest weather. Plantings should be small and frequent, and it is exceedingly necessary that the ground should be kept loose by hoeings every two or three days close up under the leaves. The plants will run to seed if the ground is allowed to become hard or packed. If the bed can be shaded by laths or cheesecloth and kept well watered, better heads and leaves will be produced. Black Seeded Simpson and Morse are thoroughly tested hot weather or loose-leaved sorts. The best cos or romaine varieties are Dwarf White Heart and Exuress Cos. These are self-blanching types and do not need tying as the taller sorts do. In head lettuce, there are several varieties that may be depended upon for summer cropping. They include May King, a medium sized early head; Little Gem, a small firm head with no outer leaves to waste and a perfect solid heart. This grows to perfection in a space six inches square and matures very quickly. Los Angeles is the largest head lettuce known, growing to an average of fifteen inches through and will head at all seasons. The heart is pure white, of remarkably fine flavor and very crisp.

Crisp juicy radishes are a treat at any time in summer. To produce them for use during the hot months, sowings must be made frequently in rich soil which must be kept well hoed and moist to promote rapid growth. There is nothing better for repeated sowings than White Icicle, though Long Cardinal, Chartiers, White Delicious and China Rose are other excellent hot weather varieties.

The winter radishes, especially those of Chinese and Japanese origin, afford some very excellent varieties which are available at all stages of growth, but when fully matured, assume rather huge proportions, sometimes measuring three feet in length by six to eight inches in diameter. These may be matured and stored for winter use in the same manner as carrots and beets. They are valuable as a cooked vegetable as well as furnishing another winter source of succulent raw food.

### Greens Again

And in your July plantings by all means include "the greens" or some of them, for the list is constantly growing. Sow Swiss chard for September use, White or Green Curled endive for use in August and September, Dwarf Green Curled kale for use in October and later, Fordhook Fancy mustard for continuous use, and Viroplay, Long Season and Japanese spinach. The large-leaved varieties of spinach are best for warm weather sowings.

We are learning little by little the value for table use of many vegetables highly prized in various other parts of the world, particularly in the Orient, but until recently entirely unknown and still very little used in this country. Among these are a number of excellent greens. Try a sowing of the Japanese chard, "Fdanso," which is said to excel in flavor our common Swiss chard, which most of us will agree is even more tasty than spinach. The plant grows rapidly and produces leaves that are long, broad, green, crimpled and thick, and of an attractive sweet flavor. Japanese spinach is claimed by the Japanese to excel in flavor every other plant of the name. It produces large tender leaves. In your sowings of greens for summer use be sure to include a little patch of New Zealand spinach. If the plants are set fifteen inches apart and given good culture, they will cover the entire ground and produce a solid mass of tender stalks thickly set with fleshy, glistening leaves that make a compact mass two feet in depth. This variety, however, will give better results with indifferent care than any other sort.

Perhaps no other crop of "greens" better repays liberal feeding and watering than does spinach. In fact, a rich, deep soil, liberal watering in dry weather, and thorough, frequent cultivation are absolutely essential to the production of the best spinach. The plants should be thinned to ten inches apart in the row and in harvesting only the largest leaves should be taken, as this will greatly lengthen the productive period of the crop.

Get the habit of using "greens" at every meal, or at least once a day. It is a good habit.

Early varieties of tomatoes, cucumbers and muskmelons may be planted in early July for fall use after the earlier plantings have been exhausted.

*(To be continued)*

# Primitive Hygiene

There are always valuable lessons to be learned from primitive peoples. The natives of Central Africa, in districts where water is infected, take care to boil the water before drinking it. They think it very strange that any one should drink water without first "cooking" it. Experience has taught them that raw water from the infected pools and springs from which they obtain their drinking water is dangerous. The Chinese and the Japanese, as well as the people of India, follow the same custom.

It is probable that the Chinese and Japanese acquired the practice of tea drinking through the custom of using only boiled water. The amount of tea used in China and Japan and in Eastern Russia, is barely enough to flavor the water, and not sufficient to produce any marked harmful effects.

But Newman tells us that although the Koreans do not drink cold water, they drink neither tea nor coffee. "At meals they drink only hot water; and food for their ponies is always boiled and given to them just as hot as they can eat it. Even on a very warm day the little animals wade across a stream of cold water, never stopping to drink, waiting patiently until they reach an inn where they know all the hot water they want will be given to them."

Until recent times, Newman tells us, the Koreans were Buddhists and did not eat meat. Even at the present time, meat-eating is by no means universal, and butchers are despised and regarded as the lowest of human beings. Until recently, butchers were not permitted to wear hats. The introduction of meat has naturally led to the development of some loathsome dietetic habits, among which is the eating of a dish known as *kimchie,* which "requires thirteen different ingredients to make it properly. The principal ones are fish, oil and garlic. This mixture is never eaten the day that it is prepared—but is permitted to stand from a week to a month. They have no dinner bells in the country; in fact, they need none. When the odorous *kimchie* is placed on the table, the whole neighborhood knows that dinner is served."

On a simple vegetarian diet, the primitive Korean built up a wonderfully vigorous and enduring constitution. Even yet there are to be found among them many examples of extraordinary strength and endurance. Newman tells us, "A coolie will trudge miles with a five hundred weight on his back."

# Department of Eugenics

# Eugenics: Its Scientific Foundations and a Few of Its Social Implications

H. E. JORDAN, Ph. D.

Professor of Histology and Embryology, Department of Medicine, University of Virginia.

The student of Embryology meets at the outset the phenomenon of inheritance. Heredity constitutes the very heart of embryology. The central problem in embryology concerns the fact of resemblance between the offspring and parents, and the correlative fact of differences between ancestors and descendants. Embryologists are therefore properly engaged in efforts to disclose the factors concerned in Heredity and Variation, and with the formulation of laws expressing the manner of the operation of these factors. If we knew all the factors in detail underlying human heredity and variation, and if we possessed in addition a knowledge of the laws controlling their mode of operation, we would have the essential materials for founding a complete science of Eugenics. The ideal of the art of eugenics is to produce a more perfect specimen of human being, physically, mentally and morally, not only as an occasional individual, but as the predominant and ultimately the exclusive human type. For the realization of this ideal an additional important condition is requisite, namely, a willingness on the part of society to order its life and conduct in accordance with eugenic principles.

This consideration brings us at once to the conclusion that the realization of eugenic ideals is primarily a matter of educating the masses to an understanding and serious appreciation of eugenic endeavors. In order that people generally may understand the fundamental principles of eugenics these must be explained in simple language. For conduct, even though willing, cannot be intelligent unless based upon knowledge. Now—perfect candor compels the initial admission that we know relatively little definitely concerning the factors and laws of human heredity. As regards heredity in lower animals and in plants, we possess relatively more complete data; but even here, compared with what we should like and need to know for a perfect understanding and control of heredity, we know also as yet but little. The question then arises whether we are in possession of a sufficient amount of definite information regarding the mechanism of heredity in animals to warrant attempting instruction in the fundamentals of eugenics, and in pleading for universal efforts to order life consonant with eugenic ideals. The support of an affirmative position will constitute one of the chief aims of this article.

## Misconceptions about the Aims and Claims of Eugenics

We may first profitably consider certain misconceptions upon which opposition to eugenic ideals and programs are based. I have implied that embryologists proceed in their investigations upon the assumption that the data of heredity as they have been discovered for lower animals apply also in general to human beings. Many people feel a disinclination to regard humans as akin to the animals, governed fundamentally by the same biologic laws, but there is no warrant in biology for drawing a sharp line physically and physiologically between humans and non-humans. This statement implies acceptance of the evolutionary doctrine. The layman may have gotten the impression, from the various discussions heard raging about evolution, that biologists disagree among themselves as regards the *fact of* evolution. However, modern biologists have no quarrel about the *fact* of evolution; their disputes concern only the *essential factors* and the *modes of operation* of evolution.

Man is first and fundamentally an animal, kin to all living matter; and so we may safely proceed in our efforts to educate human reproductive conduct upon the assumption that man is subject to, and limited by, the same factors and laws of heredity as at least the immediately lower animals. This point seems difficult to grasp, even by some individuals who have had instruction in the fundamentals of biology. They incline to regard man as subject to a quite superior and in general less rigid set of biologic laws. It became my duty some years ago to advise a young medical graduate from a far Western State against marriage while he was suffering from gonorrhea. The information about his condition came to me from an interested source. This young man admitted to me that he had twice before contracted gonorrhea, and had once been infected with syphilis. In arguing the matter with him by letter, he finally said, "You eugenists think no more of human beings than you do of horses, cows and dogs." He told me that he would marry at once, in spite of my advice against such a course and in disregard of the consequences I predicted for the innocent party, and threatened my life if I should attempt further to interfere. We are interested here only in the young man's statement about horses, cows and dogs. The implication is clear that he regarded himself, physically and physiologically, quite superior to his animal kin; but I might have added to my reply, in which I pleaded for consideration at least for the woman he professed to love, that as a man who had had some personal contact with the experiment of breeding pedigreed horses, cows and dogs, I had never seen one such animal in quite so miserable a plight as he, nor one who even in far less dangerous condition would have been allowed to perpetrate quite such a despicable offense as he contemplated. Accounts of the beastly conduct of humans during the world war also demonstrate how close is man to beast. The marvel is not so much that men sometimes act in beastly fashion, as that they can so frequently attain to Christ-like levels of heroic action and sacrifice. Acknowledgement of kinship with the animals furnishes no excuse for beastly action, but denial of such kinship should certainly be expected to support its position by voluntary superior conduct.

Such plain words about this aspect of eugenics, however, almost invariably meet the criticism that eugenists wish to eliminate the element of love from marriage. Nothing is really further from the truth. What we desire to accomplish is a discardure of the idea that love to be genuine should be blind, and a substitution for this idea of the one that intelligent love may be no less genuine. Nothing is further from our wish than to turn human society into a sort of stock-farm arrangement, as eugenists are frequently accused of seeking to do—sometimes by innuendo and implication, sometimes by direct statement.

Another misconception that should be corrected pertains to the relative importance of heredity and environment A large portion of so-called social-service work is carried on upon the tacit assumption that environment is the all-important factor in determining human destiny. A moment's reflection, however, should be sufficient to convince one that heredity is of more fundamental significance. All the potentialities of the future organism are wrapped up in the fertilized egg at the very beginning of individual life. Favorable environment is a prime requisite for proper and full development of these hereditary potentialities, but the environment can add nothing to this initial sum of hereditary possibilities. It can only inhibit or suppress certain constituents in the full complement of hereditary endowments. No matter how nearly ideal the environment may be, if the hereditary basis is defective, the developmental outcome will be defective in corresponding degree. An imbecile cannot be taught differential calculus, aeronautics or plumbing even by the best of teachers and under the most favorable of environmental conditions. This consideration, however, does not detract from the importance of environment; it only serves to show that heredity is at least of equal importance. Good heredity and favorable environment are both essential for good developmental outcome. The more perfect result demands a more perfect heredity, unfolding in an optimum environment.

What we should be interested in at present as workers looking towards a healthier, happier, more efficient society, is primarily heredity, and secondly the attainment and maintainance of a favorable environment. If heredity is then the fundamental desideratum in the attainment of eugenic aims, the question arises whether the efforts to salvage the weakling, the defective and the criminal are not actually defeating the very ends they are expected to accomplish. Every physical, mental and moral weakling or defective supplies the potential source of more of his own kind. This being acknowledged, what then is the proper course to pursue in a Christian age and a democratic society? We can, of course, not advocate the destruction of the defective, or even the denial of every possible means for the achievement of maturity and for the enjoyment of the essentials and even the comforts of life. The instinct of charity cannot be spared from the complex of human social acquirements. Its loss would hardly be compensated for by any possible eugenic gains. But these charitable efforts need not be carried to the extreme of allowing defective reproduction. In fact, eugenic sense and conscience dictate that reproduction of at least the grossly defective, be prevented by such humane means as modern society can command.

The evil and the cure of the misapplied charity as regards the grossly defective may be illustrated by citing the well-known case of the cretins of the district of Aosta in Northern Italy. These repulsive imbeciles, under the protection of the Church, reproduced in such appalling numbers that even the most stubbornly sentimental were finally convinced of the actuality of heredity in this condition, and of the foolishness and seriousness of allowing the unchecked propagation of these defectives. About thirty years ago these unfortunate cretins were segregated and their reproduction prevented under institutional care, until now this social and economic menace is said to have almost disappeared.

Since the recent war, it seems to me there can no longer be any excuse for ignoring the harm done by the unchecked reproduction of our defective types. More than once did I hear the complaint of middle-aged surgeons who could not go to the front, of how futile life seemed to them when compelled to spend their time in patching up the aged, the weak and the wrecked at home, when our finest youth were daily slaughtered at the battle front. The fact could no longer be blinked that the longer the war continued the more would the future of the race become dependent upon the weak and the unfit. When one contemplates the fact that at least 8,000,000 of the best of the young manhood of the world was destroyed in the recent war, one almost despairs of accomplishing any good by longer attempting to teach about eugenics. The eugenist today, facing the naked facts of the past six years, including the human slaughter and the ensuing social upheavals, keeps from turning cynic only with the greatest effort. There would seem to be little sense in worrying about eugenic efforts and programs if any gains are to be perennially vitiated by devastating wars. The optimistic, that is, the serious and effective eugenist, however, must combat this threatening spirit of cynicism by emphasizing the abundant "moral equivalents of war."

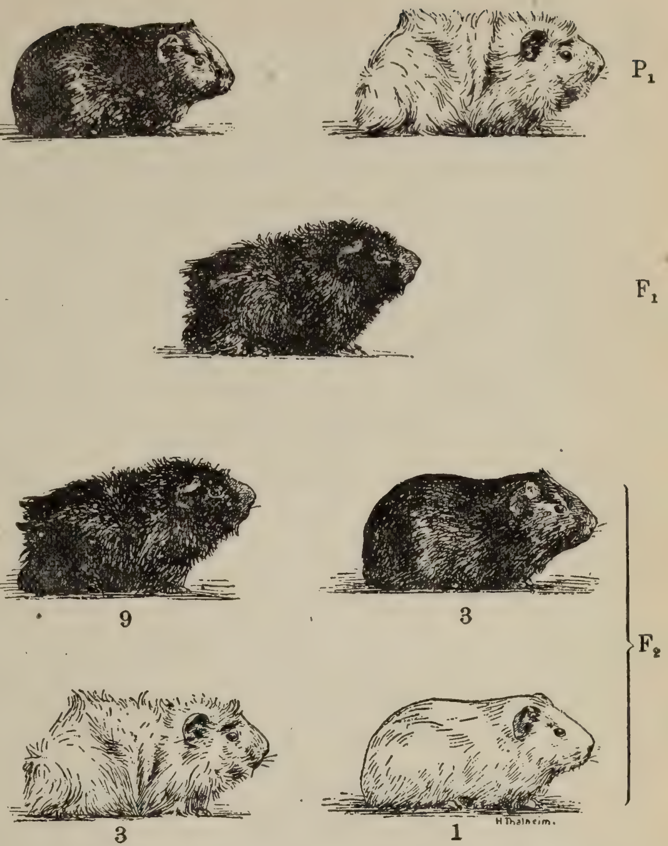


FIGURE 1. The illustration after Baur shows the results of crossing smooth black and rough white generation, 12 of the offspring are black to every 4 that are white; and 12 have a rough coat to every 4 with smooth coat. In each case the mendalian ratio of 3 to 1 obtains. When both pairs of characters are considered, the ratio is as follows—9 rough black; 3 rough white; 3 smooth black; 1 smooth white.
(F1) all have a black rough coat. Blackness of coat and roughness of coat are both dominant to the mendelian alternative characters, smoothness of coat and unpigmented condition of coat. In the F2 generation, 12 of the offspring are black to every 4 that are white

After this preliminary and introductory sketch we may now more profitably examine the scientific basis of eugenics, and then note some of the implications of the clearer data of heredity, and attempt finally to determine action for the individual as concerns both himself and society.

## Scientific Basis of Eugenics

Eugenics as "the study of those agencies under social control which may improve or impair the racial qualities of future generations either physically or mentally" (Galton), is based largely upon the data of heredity. The racial qualities of future generations can be improved only through the process of transmission of the more desirable qualities by breeding They may be impaired through breeding from inferior types and through the operation of untoward environmental conditions. Many animal and some human traits follow the so-called mendelian laws of inheritance. Some of the more fundamental characters are inherited directly from the mother through the egg, apparently uninfluenced by the hereditary material contributed by the male parent at the time of fertilization of the egg. Other apparently non-mendelian characteristics or traits may be transmitted at variance with mendelian laws, but some of these instances are constantly being brought into accord with mendelian interpretations. The discussions on the part of biologists regarding heredity do not concern the *fact* of heredity, but chiefly the *mode* of inheritance; that is, largely whether mendelian or otherwise; and if the latter, the nature of the non-mendelian mode. Since continually more human traits are shown to conform with mendelian principles, it becomes important to understand this mode of inheritance.

## Mendelian Inheritance

Mendelism centers about three concepts: *unit characters,* the phenomenon of *dominance,* and the segregation of the physical bases of a pair of unit characters in different germ cells, producing thus a *purity of germ cells.* The matter may be best illustrated by describing an actual experiment with animals. When a black variety of guinea-pig is crossed with a white variety, all the offspring of the first generation are black in color (Fig. I.). We are here following only a single pair of unit characters, black coat color and white coat color. The determiners for these coats' colors are carried in the germ cells of the parents; the determiner for black color in one parent, that for white color in the other parent. Since all the offspring of such mating are black in color, the black determiner is said to dominate over the white determiner. Dominance may be more or less complete, conditions of less complete dominance resulting in an apparent blending of the parental characters in the first generation of offspring. When now such black offspring of the first filial generation ($F_1$ generation) are mated among themselves, the offspring of this resulting generation ($F_2$ generation) consists of white and black offspring in the ratio of 1 to 3. This result demonstrates that the determiner for white coat color remained latent, or that its effect was masked by the black determiner, in the first filial generation. The "determiner for white coat color" is actually a condition of absence of a determiner for pigmentation.

When a white individual of the second filial generation is bred with a similar individual, all the offspring of such a mating will be only white. Black individuals can never result from white matings. Nothing can appear in the soma that was not represented by a determiner in the germplasm. When now the three black individuals are mated with similar individuals, it will be found that one of the blacks will produce only blacks, while two of the blacks mated with similar (hybrid) individuals will again produce white and black offspring in the proportion of 1 to 3. In other words, the original ratio of 1 to 3 in the first filial generation consists of one pure white recessive, one pure black dominant and two hybrid black dominants. This is the well-known mendelian formula of 1 to 2 to 1 for unit traits in hybrid crosses. The blacks that do not carry the latent white determiner in the germplasm can never produce white offspring when mated with similar individuals. The proportion of 1:2:1 above given could only result, following the law of chance, if all germ cells both of the male and the female black hybrid parents contained only one or the other of the pair of determiners or factors for white and black colors. Under these conditions there would result one chance of a black determiner meeting its like at fertilization, to one that a white determiner should meet its like, to two chances that a black determiner should meet a white determiner.

When more than one pair of unit characters is considered, the process becomes more complicated, but it follows exactly the same laws. Figure I. illustrates a case where two pairs of unit characters, white and black color of coat, and smooth and rough character of coat, are represented in their mendelian hereditary distribution. The ratio of 12 to 4 as regards both dominant characters of black coat and rough coat is essentially the ratio of 3 to 1 or 1:2:1, characteristic for the offspring of mendelian hybrids. The result is complicated also in certain cases by the fact that the members of certain pairs of unit characters are associated in heredity with members of certain specific other pairs. There are other complications and variations whose description can not be dealt with here. The reader who desires to pursue the subject beyond the elements here presented may be referred to Davenport's "Heredity in Relation to Eugenics," (Henry Holt & Co.). Here the matter is presented in clear form, and many pedigrees of human defects are analyzed from the mendelian viewpoint.

It lies entirely outside the scope of this paper to discuss the application of mendelian principles of heredity to specific human traits. Suffice it to say that no student of genetics any longer questions the accuracy of the mendelian analysis for certain cases among plants, animals and humans. This mode of inheritance is named after Gregor Mendel, who first, in 1865, published his "laws of inheritance," formulated on the basis of results of hybridization experiments with garden varieties of peas. The essential point concerns the demonstration that heredity is a fact, and that certain characters follow in inheritance certain laws so definitely that the results of a certain mating can be predicted with mathematical accuracy. Before eugenics can become a science, however, we must know the laws of inheritance controlling all the human traits in which eugenists are interested, and the specific effects of specific environments upon the hereditary factors involved, and upon the operation of the laws of inheritance.

Obviously, though this ideal is not theoretically impossible of attainment with continuing research, we are still far from such goal; in fact, we have barely begun to advance in the right direction. This is an important point to stress, for eugenics has been much injured by its too-enthusiastic friends. The latter frequently have talked about heredity as if it were practically a complete science, and everything strictly mendelian. Such is by no means the case. Only relatively few human traits have been clearly demonstrated to follow strictly mendelian laws in inheritance. But the attitude of refusing to consider heredity at all, common on the part of certain over-anxious opponents of eugenic efforts, is similarly harmful and unwarranted. Though certain traits may be shown not strictly to follow mendelian formulae in inheritance, this gives no reason for concluding that there is no such thing as specific inheritance.

*(To be continued)*

# Department of Physical Education

**Conducted by C. WARD CRAMPTON, M. D.**

Dean of the Normal School of Physical Education, Battle Creek, Mich.

# Carrying the Battle Creek Idea Into the Industrial Field

Wherever people spend the varied hours of their days, whether in home, in school, in college, at play or at work, in these places is an opportunity to live according to ignorance and chance impulses, or in accord with biological principles.

In public schools, physical training has received the first and most extended attention, and has advanced farthest toward its fullest service to mankind, however far it still has to travel, however long its course may run before it reaches its goal. Playgrounds, recreation centers, and community centers have received their impetus, and are developing into important features of community life. The latest of the new fields to be entered in the field of biological engineering is that of industry. This field has been developed from two sources, and because of the usual two motives.

The employers have been coming to the conclusion that they can get better service and more work done if their employees are given every available human advantage, and there has arisen for the modern factory the so-called "welfare work". This includes a consistent health and social care of the employee from the time he applies for his first position. He is given a physical examination and sometimes a thorough intelligence test. He enters upon a period of instruction in which he is tested to find the task for which he is best fitted. He is given the maximum of light, air and comfort. There are periods of relaxation in the long stretches of morning and afternoon, and in these he may be given food and exercise as well as rest. His noon hour provides extended opportunities for quiet and active games, while the provision for a hot, appropriate lunch is an important contribution to his efficiency. He may be placed upon a "task system" where he is one of a team, so that when the work of the team is completed he can go home an hour or more before the usual closing time. After the day's work he need not leave the factory premises to enjoy both indoor and outdoor recreation. In the evenings there may be entertainments, lectures, social gatherings of various kinds, and through the day, after work or at night, there are opportunities to go to school, for foreigners to learn the English language, history and what we like to call "Americanism," and for all to learn more of the world and more of the job, which might place him next in the line of promotion.

At first all these things are provided by the employers either because they increase efficiency or from the desire to add to the stock of human happiness. Both of these motives are sound and efficient, and the results have justified the means. In addition, the workers themselves have in some cases begun their own recreation and health activities, and the employers have taken them up. Whatever the source or the purpose, the result has been a humanizing of industry and a general trend upward toward the leading of a better, biological life.

Most of these activities are either within the field of physical education or so closely related to it that those who become teachers of physical education are easily adapted to the procedure. The morning setting-up exercises in intervals of work, the noon recess recreation activities, with the possibilities of entertaining instruction in health ways, the conduct of the factory luncheons, the introduction of after-work athletics, games, social affairs, week-end vacation activities of all kinds, are directly in the field of physical education. Allied with it are the physical examination, the health nurse's home visits, factory sanitation and the like.

Recognizing these facts, the Battle Creek Normal School of Physical Education, besides giving the standard curriculum of the up-to-date normal school of physical education, which gives the skill required for ordinary physical training procedures, adds to this fine program in the third year for its Seniors an optional course in those features of physical education particularly applicable to the industrial field. The following is an outline of the elective course which tells this fully:

* * * *

*Third Year Industrial Elective Factory and Commercial Welfare*: A comprehensive and detailed study of the conditions surrounding workers in factories, business concerns, department stores and the methods of improving their social and physical welfare.

*Sociology, business operations, business methods.* The daily routine of the workers. Types of occupations. The factory organization. Study of existing organizations throughout the country and their literature. Visits to prominent welfare organizations in full operation.

*Health conservation.* Work management. First aid. Factory nurse and doctor. Visiting nurse and physician. Rest rooms, Home nursing.

*Relief periods.* Setting up drills.

*Summer camps and vacations.* Week-end trips and camps.

*Noon recreation and free intervals.* Recreation rooms. Evening entertainments. Literary and social clubs. Girl Scouts, Camp Fire Girls. Boy Scouts.

*Business management of a welfare organization and articulation with the business owners.*

*Practical work.*

Each student will be fully prepared to introduce a well-rounded organization in a factory or business concern.

*The Social Phalanx*: This is a course which provides skilled workers to answer the modern demand for all-around biological living, health, happiness and efficiency. Hitherto there have been doctors, nurses, physical trainers, athletic coaches and dietitians—all specialists in living.

There have also been teachers and mothers—each in her own practical way "an all-around specialist" for her own home or class. The various specialists helped the teacher and the mother, each in her own way, but sometimes at cross purposes, and many communities could not afford to have a specialist of each kind.

* * * *

Inasmuch as the school has just begun its three years' course, this series of electives will not be regularly begun until the present Freshmen shall have become Seniors, which will be in two years. The need, however, for skilled workers will not wait, and the writer approached the distinguished life-long friend of Dr. Kellogg, Mr. John H. Patterson the Head of the National Cash Register Company of Dayton, Ohio, who is an enthusiastic follower of the biological

life. Mr. Patterson approved the Dean's idea at once, and called into council Dr. Barr, a Battle Creek graduate, and a plan was formulated whereby a series of senior students, two at a time, were to spend six weeks at Dayton to receive first-hand and by actual experience, a knowledge of the industrial physical training field. This plan has been in operation several months.

The students are welcomed by the previous pair of students and are brought to the employment office, where they are put through exactly the same procedure as if they were to be employed on the usual basis. They are then conducted personally through the entire plant, which requires several days, so that they become familiar with the general features of every department, and what is most important, they come in contact with the spirit which permeates the whole National Cash Register Plant and its wonderful management. They see everywhere light, air and sanitary conditions. Machines carefully safe-guarded; modern sanitary conveniences of every kind; helpful and stimulating mottoes placed above the heads in the corridors, giving advice and inspiration to the worker and the guest of the plant. During the next six weeks they become actual workers in six of the many departments, learn by experience what it means to be a worker earning her living, keeping the required hours and doing required work. They learn to operate stamping, stenciling, cutting and riveting machines,—they assemble various parts of the machine—they even work in the kitchen and the laundry.

They are not ordinary workers, however, for when morning recess time is called, out they come into the corridor; then with cheery voice and whistle they call the workers to refreshing and stimulating exercise. It is to be remembered that the workers have been engaged in tasks which require muscular labor, careful concentration and application. They need rest, and the exercise must be so calculated that rest and relaxation will be the results, and not tension and concentration. Moreover, it is found that factory work frequently requiring sitting still or otherwise in one position is likely to cause disharmony and irregularities of the body, including that sign of lowered vitality, poor posture; so the workers are in great need of corrective exercise. With recreational, relaxing and corrective features hand in hand with a happy inspiration of exuberant leadership, the short period of exercise is begun. When time is up, the workers go back to their tasks stimulated and made more happy and able in mind and body.

The rest period is also an opportunity for workers to get (at the expense of the company) a cup of malted milk, one of the most rapidly assimilable foods that can be obtained.

After work is over, there are classes and clubs for athletics and games and dancing, and here the Normal School students are quite in their element. They find that the factory workers are just ordinary girls in spirit, appreciation and interests.

They obtain further training directly in the Welfare Department itself, visiting the clinic where cases of accidents are cared for, they follow the visiting nurses to the home of the absentees, they assist the dental department in its prophylactic work; and withal learn just what they came to learn—what it is actually to be a welfare worker in a factory.

They taught to the factory at Dayton, however, more than physical training. The

Normal School and the Cash Register Company have long been friends, and they assimilated each other's ideas. One of these is the value of happiness, a value which even modern efficiency experts are beginning to recognize. They had not been long in Dayton before they were given the name of "Mr. Patterson's Sunshine Girls," and sunshine they carried through the factory wherever they went. Part of their report is so humanly interesting and illuminating as an evidence of the newer spirit in business affairs, combined with the direct provision of physical training, and is so good, that it is presented herewith without editing:

### Advantages and Ideas Gained from a Course of Study at the National Cash Register Plant

1. Observation of remarkable examples of efficiency, in all things, big and little.

2. Personal contact. How to approach and how not to approach different individuals. Personal element of paramount importance.

3. Viewpoint of different people seen at various angles in regard to physical training.

4. Actual experience gained in practice teaching physical training from recreational standpoint (side issue, as physical training is not compulsory). Dealing with crowds. Introducing our "goods" to people who were not as enthusiastic as we. We learned that we must do as follows:

a. Arouse their interest by objective physical training. Secure results by giving girls a good time; make them think they are playing, *not* working.

b. Detect flaws in our methods and try to correct them.

c. Profit by our experience, and learn that the "never say die" spirit will carry you through most any difficulty.

5. Necessity of schooling ourselves to be ready for anything, and having enough faith in ourselves to use all the pep and spirit possible to summon, to put things across.

6. The fact of being able to prove of real, practical benefit to even a few of our fellow beings is worth all of our time here, not only in broadening our lives, but putting the joy of living into someone else. Examples:

Advice for correction of: weak backs, sunken chests, poor posture, broken arches, tired feet.

Explanation of physical training, including modern ideas. Introduction of new games, dances, exercises, good times, pep and enthusiasm.

7. Sense of real responsiblity developed: factory hours, work, salary (keeping down expenses by living on moderate income).

8. Appreciation of thoroughly sincere, altruistic spirit of cooperation for the benefit of all concerned, which is so wonderfully put into operation at the N. C. R. all along the line, from Mr. Patterson to the lowest paid laborer.

9. Any friction (which is very slight) is thoroughly investigated in a sane and sensible manner, by authorities, and much fairness is shown in dealing with such cases.

10. Ideal working conditions, compared with even good conditions of other factories. Employees really living, not merely existing. Employees of other factories where fabulous salaries are paid for the most common labor are money mad—will not stand strain forever, and are not happy and contented with work, for their hearts are not in it. Educational classes give people outside interest, which serves to broaden their lives and make them finer, better citizens, as well as more competent workmen.

11. While the building of cash registers is purely a cold business proposition, the spirit of the N. C. R. seems to be to uplift humanity and assist in its progress and development.

12. Coming in contact with all sorts of people in all sorts of professions, has driven home the fact that we all are, or should

be, intensely interested and wrapped up in our own chosen line of work, and are all trying to get it across to the other fellow and make him see just how important it is; thus we all share one another's lives and are brought in closer contact with each other.

This is the first stage of an educational movement which promises to be important and significant. The coöperation of industry and educational institutions is growing; starting with the cooperative high school classes, it has extended by means of the recently held industrial convention under the auspices of the president of the Drexel Institute of Philadelphia, to the colleges and universities. The utilization of the superb educational advantages of the National Cash Register Company by the Battle Creek Normal School of Physical Education to increase the value of its educational project is matched and complemented by the entrance of a large industrial plant into a consciously directed educational campaign. The confident belief that there are industrial organizations in the United States directed and inspired by a splendid altruism, based upon a system of business efficiency, and that these organizations have a tremendous educational message which should be made available to the rest of the body politic. The National Cash Register Company should be followed by others into the field of education, for by this combination of effort and inspiration social industrial unrest, social inefficiency and wastefulness of human effort and industrial turmoil will be cleared away by good will and mutual understanding, and coordinated effort to a common end.

# Home Hygiene and Economics

## Home Remedies for Pain

### Hot-Water Bag.

A rubber bag filled with hot water is an excellent means of relieving pain in deep-seated parts, pain in the back, chronic intestinal pain, various neuralgias, and other pains in which inflammation or congestion is not present. Hot bags should not be employed continuously in cases of acute inflammation.

If a moist application is desired, a moist flannel may be wrapped around the water bag. Bricks, sand bags, etc., may be used in a similar way.

### Radiant Heat.

This consists of the application of a lighted electric lamp surrounded by a suitable shade or reflector to the part affected. It is a most excellent means of relieving pain. The heat is more penetrating than that from any other source, except the arc light and sunlight. It is a capital means of relieving pain; in the spine, various joint pains, and all kind of neuralgic pains.

### Flame Heat.

The heat rays which radiate from a blazing fireplace may be utilized for relieving a chronic pain in the back or side and non-inflammatory pain involving any large portion of the body. Lie on a sofa or rug before the fire with the skin exposed.

### Arc Light.

Sick animals nearly always lie down in the sun, unless suffering from inflammation. There is no better remedy for general neuralgic pains than a sun bath.

### Hot Air.

A current of heat driven into the ear is a most effective means of relieving earache. A general hot-air bath removes rheumatic pains.

### Alternate Compress.

The alternate application of hot and cold compresses is an effective means of relieving pain from internal congestion. The application is made over the painful part, and affords relief by diverting the blood to the surface.

### Alternate Sponging.

The application and effect are the same as for the alternate compress. Very much hotter water can be employed, however; and if the parts are rubbed with ice in alternation with the hot application, most powerful revulsion may be induced.

### Cold Rubbing.

This is an excellent means of relieving certain forms of pain. Neuralgic pains may be aggravated by this means, but pains due to congestion are usually relieved by its use. The parts must simply be rubbed with a cloth dipped in cold water. The temperature of the water should not be lower than 60° F. It is often necessary to continue rubbing for a long time, until the surface is thoroughly reddened.

### The Ice-Bag or Ice Compress.

Patients with inflammation or congestion are best relieved by the application of a small ice compress or an ice-bag over the painful part. Generally it is well to apply heat to some distant part in connection with the ice application or to make a general hot application so as to prevent chilling.

### Heating Compress.

Wring a cloth out of cold water and apply over the painful parts. Cover with mackintosh and then with several thicknesses of flannel. The moist cloth will quickly become warm, and will retain the heat for a long time. It acts as a poultice, and is fully as effective as a poultice (besides being much cleaner) in deep-seated spinal pains, pains due to indigestion, chronic catarrh of the bowels and constipation. A heating compress applied to the abdomen will often relieve congestion of the head in headache, and so induce sleep.

### Fomentations Followed by the Heating Compress.

This is a most effective means of relieving pain in chronic rheumatism. The heating compress should usually follow the fomentation, and is invaluable as a means of removing sciatic pains, lumbago, and most other deep-seated pains due to nerve trouble. It is excellent in neuritis.

### Cotton Poultice.

This is similar to the heating compress. The parts are covered with cotton, covered with mackintosh, then with flannel. The heat induces perspiration, which accumulates in the cotton and moistens it, so that after a time the application really becomes a moist compress. Its effects are the same as a poultice, but more cleanly and effective.

### The Clay Poultice.

Modelers' clay mixed with equal parts of water and glycerine to the consistency of very thick cream, and applied hot to the painful parts, often affords relief. This is a most excellent application, far better than bread and milk poultices or any similar preparation. Under the name of "Antiphlogistin," a clay paste is sold in many drug stores. Our experience is that this preparation is no better than ordinary clay prepared as suggested.

In making the application, the clay is spread over the affected parts, and covered with cotton. It should be warmed before using. Warming softens and facilitates the application, and at the same time the heat itself helps the effect.

### General Hot Bath.

Severe internal pain is best relieved by a general hot bath, which, drawing the blood to the surface, often affords complete relief in severe pains due to gall-stones, gastritis, arthritis, and other painful affections.

### The Hot Blanket Pack.

This is similar to the hot-water bath, but is not so effective. It can sometimes be more conveniently employed. It is useful in relieving the pain of menstruation and of appendicitis. The whole body is wrapped in a blanket wrung out of hot water, covered with a dry blanket or two.

### The Foot-Bath.

The water should be as hot as can be borne. Use 105° to 120° F. The temperature of the water may be gradually raised. The deeper the water, the greater the effect. The leg-bath is still more efficient than the foot-bath, but cannot be taken in bed. If necessary, a fomentation may be applied to the feet, but the effect is not so good as that of the hot foot-bath. It is an excellent means of relieving severe pain in the head, also ovarian and menstrual pains.

### Revulsive Sitz.

With the feet in hot water, the patient sits in water at a temperature of 102° F., and the temperature is gradually raised to 110° or even 118° F., or as hot as can be borne. The skin should be well rubbed.

After four or five minutes, the patient stands, and cold water is dashed over him. If cold water induces pain, the temperature is gradually lowered. In this case the patient remains from five to ten minutes longer in the bath, the moist surface being rubbed. This prevents chilling after the bath, and increases the permanency of the effect produced.

### The Hot Hip and Leg Pack with the Ice-Bag.

This is especially useful for relief of pain due to pelvic inflammation in women, or appendicitis in either men or women. The hips and legs are wrapped in a blanket wrung out of hot water, and after the patient begins to feel warm, an ice-bag is slipped under the blanket and over the affected part. This is a most excellent means of combating appendicitis. By the renewal of this application for two or three hours, an attack of appendicitis sometimes may be checked.

### Ice-Bag and Fomentation.

For toothache, lay an ice-bag on the side of the neck under the jaw and put fomentations to the side of the face. If necessary, employ the hot foot-bath and the hot hip and leg pack. Also consult a dentist. The temperature of the water should be from 102° to 106° F.

### Hot Enema.

A copious enema will relieve severe intestinal pain in a marvelous way—the pain of gall-stones, renal colic, appendicitis, inflammation of the bladder, and neuralgia.

### Rest.

Absolute rest of the painful parts is usually necessary. Rest in bed is required for the relief of severe internal pain. In pleurisy, rest of the affected lung should be secured by fastening a tight bandage around the lower part of the chest.

### Position.

Pain in the limbs, accompanied by throbbing, may generally be relieved by raising the limb one or two feet from the bed or couch upon which the patient is lying. Rest is always required when pain is present.

# Home Hygiene of Children

EDNA NEIGHBORS

It has been a too common habit to lay the blame for at least the beginning of many physical and mental handicaps upon the public schools. A closer study of actual conditions, however, reveals the fact that the home plays a far greater part than the school in laying the foundation for such handicaps. In order for health conditions to be improved, the home and the school must co-operate in this work. If parents will consider the points made in the following paragraphs, they will be able to co-operate more successfully with the school in the improvement of health conditions.

Parents often need to learn to interpret correctly the rather plain signs of very common disorders. There are many significant habits which indicate such disorders, yet these are frequently ignored. It must be remembered too, that symptoms of health are equally as manifest as those of ill health, and things which to some seem abnormal are merely normal manifestations of the child's development, the like of which could be found in their own forgotten childhood. Each child requires special study, for there is no such thing as the "average child." All children are "exceptional," if we accept the conclusions of eminent psychologists.

## The Nervous Child

The following history of this fast-becoming-too-frequently-met child is most accurate: "He is apt to complain of headache, is difficult to put to sleep, talks at night, grinds his teeth; while in the morning he is tired and not ready for breakfast. He is often bright enough mentally, affectionate in disposition, but he is likely to be irritable, passionate, and too emotional. While rarely laid up with a definite illness, he is not strong; he cannot walk far without getting tired; is capricious in appetite, yet sometimes ravenous. The nervous child is very difficult to feed. On looking further at such a child you will probably find that the face is the best nourished part of the body, the limbs being thin."

To this description it may be added that the nervous child is extremely restless, very active much of the time to no definite purpose; the emotional nature is often unduly developed—smiles and tears are equally near the surface. He is inclined to selfishness, and always on the alert for offenses from others, yet quick to give like offense to others. The sum total of his earlier years is that of a center about which the family life revolves. This type of child is usually difficult of discipline at home. Unfortunately, parents, many times recognize in their very small child, the prototype of one or the other of themselves. They may see the unhappiness which is very likely to come with added years if this wee tot is not trained in self-control; still they cannot bear to see their child suffer, and as a result he rarely meets with resistance. Every desire is satisfied, The very small child quickly becomes a tyrant, a source of annoyance to all who are associated with him outside the home as well as in the home. It may safely be stated that the nervous disorders of many of the neurasthenic adults who fill our sanitariums may often be directly traceable to faulty methods in early training.

The nervous child requires very definite and rigid, but at the same time, kind and sympathetic home discipline. He should be trained in patience, self-control, respect for the rights of others, strict obedience to just directions, unselfishness, and a regular life.

A nice distinction must often be drawn between the constantly overlapping influences of heredity and environment. A child with an originally well-balanced nervous system may become restless, irritable, and petulant under a bad home environment. On the other hand, many a child with a faulty heredity and a distinctly nervous predisposition has developed into a normal life, with favorable environment. An unfavorable school environment is capable of doing much harm, yet though most ideal, it can do little to offset the influence of a poorly ordered home. If the first five or six years have been spent under the pernicious influence of scolding, nagging, irritable, unsympathetic parents, or with the reverse condition of much humoring of whims, constant attention, much misdirected kindness, never a pleasure foregone for the sake of another, it is too much to ask of any school having the care of the child for only a few hours each day, to re-educate that child. Children surrounded day after day by a home environment where their dispositions are never studied and wisely dealt with furnish most of the nervous children of our schools.

## Some Plain Signs of Nervous Disorders

These disorders usually belong to one or more of the following groups:

**Chorea** or St. Vitus' dance is often confused with habit spasms. Such spasms, characterized, for instance, by wrinkling of the nose, expanding the nostrils, elevating the eyebrows, grunts, and so on, are seldom more than a habit which is curable, but without the aid of punishment or scolding; but chorea itself is a most unfortunate affliction and is often of a serious nature. The muscular movements include larger groups of muscles than in habit spasms. There may be the twitching of various parts of the body, as the head, arms, legs, and contortions of the face. It may be indicated by extreme restlessness, purposeless motions, inability to hold pencils, books, knives and forks, falling or stumbling frequently and without cause.

The cause of chorea is associated with a number of functional and constitutional disorders, one of the most common and most readily removed causes being diseased tonsils. Impoverished diet is also too commonly one of the main causes of this disease. Children having this disease should have rest, nourishing food, and lead a quiet, regular life. Not alone for his own good, but for that of the other pupils, should such an one be removed from school.

**Stammering and Stuttering.** "The basis of these speech defects lies in defective nervous control." The difficulty sometimes makes its first appearance after such diseases as scarlet fever or diphtheria. An accident, or fright, may initiate the disorder. In some cases, it seems to come by way of imitation, or perhaps, absent-mindedness.

Children who stammer and stutter are often of superior intelligence, of a very sensitive nature, and as a result the child's school work may be a failure. The first appearance of the defect is too often met with impatience and severe reproof from parents. Fault-finding and scolding only aggravate the trouble. Consult a good specialist with a view to having the defect remedied.

**Fears.** One may be ready to offer a premium for the twentieth-century child who has a fear of anything or anybody. Old-fashioned timidity seems to be fast becoming extinct. The sight of a child placing himself in immediate danger of a car on a crowded thoroughfare is not uncommon. This type of fearlessness is not a virtue, and very likely the same youngster who places himself in dangerous situations during the day is in the evening fearful of the darkness of his sleeping apartment across a hall from his mother's room.

Nervous children are prone to morbid fears of various sorts. These simple, childish fears sometimes cause intense suffering, and they certainly should not be treated indifferently by parents. It is said that of all emotions, fear is the one most calculated to produce lasting effects upon a neurotic child. Morbid fears, as of noises in dark places, lightning, wind, whistles, punishment, witches, and numberless other real or imaginary persons or things, should be met with sympathy, explanation, and removal of the cause, if possible. A normal child is most unfortunate when left to the care of one ignorant as to the harmful effects of frightening him into obedience to their desires; for example, with stories of bears, darkness, or any variety of stories of a grotesque nature. Such discipline should certainly not be tolerated. Parents may, with a little kindly questioning, very soon discover the source of many childish fears and remove them entirely. Corporal punishment is unhesitatingly condemned for such cases. The very fear of punishment upon divulging a fear may probably cause a child to try within itself to suppress that fear, which is not very often a successful procedure.

**Fatigue.** The child who is, or at least appears to be, tired all the time needs medical attention. The blood may be impoverished, or loaded with "fatigue poisons," or other waste products which attack the nervous system. This fatigue is sometimes due to worries known only to the childish mind, or to digestive disturbances, wrong food or too little sleep. A child chronically tired out is a sick child who requires immediate attention.

## Common Errors in Children's Diet

It is no difficult matter in children of school age to select those suffering from some form of malnutrition. Such children are usually thin, pale, nervous, easily fatigued, and generally without much ambition. Sometimes the gums and linings of the eyelids are quite colorless, headache is common, and either constipation or diarrhea is the rule. Upon careful questioning any child selected from the group described above, the fact that he has fussy food habits, that he sleeps poorly, may readily be ascertained. Further questioning reveals the fact that he abhors vegetables, with the exception, perhaps, of the potato; that he would subsist entirely upon candies, pastries, doughnuts and sweets, if possible. Sometimes the case may be that he will eat abundantly of starchy foods, utterly refusing milk and eggs. Most likely he eats at irregular intervals, and too rapidly, the food being bolted, else washed down with water, tea, or coffee.

Faulty food habits of children are due largely to the parents rather than to the children. Sometimes indifference and neglect are responsible for this condition, while in many cases ignorance is the sole cause. Often persons planning menus for families in which there are children of three, four or five years expect those children to partake of the same food as the grown-ups of the family. In many instances, this will consist of very rich foods, hard fried foods, very likely meat in some form, fresh hot breads, tea or coffee, pickles and excessively sweet desserts. Is it any wonder that children eating such food very easily early in life develop a most obstinate case of poor elimination? In case meat is freely allowed, a bad case of autointoxication, or self-poisoning, results, since intestinal putrefaction is even more rapid with children than with adults. The autointoxication is many times the entire cause of nervousness, general stupidity, and irritability in a child, which may be easily removed by proper diet.

When children are capricious in their appetites, the matter of having them eat properly is truly a problem, but scolding, nagging and persuasion avail little. About the only reasonable course to pursue is for the parent to learn what the proper diet is for a child at different ages and then see that he gets what is suited to his needs. Place the right food before him at the proper times, and if he gets the fresh air and exercise he needs, he will soon become really hungry and eat what is prepared for him. Firm but kind and patient discipline may be necessary to secure satisfactory results.

Eating between meals is to be discouraged, at least until normal food habits have been established. But once this has been accomplished, there is no valid objection to allowing him plain food when he is truly hungry, however, this between-meal luncheon should not consist of candies or other sweets. If he is really hungry, he will eat a wholesome sandwich of bread and butter, which is not likely to interfere with his desire for the next meal, as sweets will do. As for water, neither child nor adult can drink too much, provided it is not used to wash down unmasticated food. It is usually observed that children and others malnourished need definite instruction in this respect.

The question will naturally arise at this point as to what is the proper diet for children of different ages. The following suggestions may be taken as a general guide in this matter:

When considering the question of how best to feed children, especially school-children, it must not be forgotten that the period extends over a number of years, and that in the school-room children are found of the same ages whose stages of growth and development are different; consequently, their needs in the way of diet are somewhat different. In this, as with disposition, each child is more or less "exceptional.' It would be impossible for any directions to adequately cover the requirements of all children, even at the same stage of their lives, with their widely varying tastes and idiosyncrasies and constitutional tendencies. Only suggestions can be given. The hope is that those who have the catering in charge may arrive at an intelligent understanding of the various foods, and then watch reactions to diet with every child and make any necessary readjustments to the special needs of any particular child. It is unnecessary here to attempt to analyze extensively the scientific principles underlying the proper selection of food. However, at this point, it may well be said that there are several different food materials which supply different bodily needs. The chief food materials are proteins, fats and carbohydrates, the latter including both starches and sugars. To these must be added the mineral salts and vitamins which are so essential to a well-balanced diet for children, and, also water.

Different foods furnish differing quantities of these food materials, and the work of the different materials in the body is different. The foods having a large percentage of protein, as milk and eggs, supply material for both the building of new muscular tissue and for the repair of the tissue worn out by exercise. Thus it may readily be understood why a growing boy needs a good deal of food. Unlike the adult who has attained his full development physically, he needs food for growth, plus that for repairs. The carbohydrates, in the form of bread, potatoes, cereals, fruits, sweets, and all vegetables, in fact, furnish heat to keep the body warm, and energy or power with which to work. This material, when taken in excess of that required for heat and energy, may be stored in the body for future use in the form of fat, rounding out the frame, but it cannot be used to build real or deep tissue, as the proteins are used. The fat taken in the form of butter, oils, cream, or nuts, serves practically the same purpose as the starches and sugars, or carbohydrates. The mineral salts, which are blood builders, may be derived from vegetables (the green vegetables in particular), fruits, yolks of eggs, milk, and cereals in which the entire grain is used. The vitamins, health- and growth-promoting substances, abound, for instance, in fruits, also in butter, cream, and cereals in which the entire grain is made use of.

Having some idea of the different materials the body requires, it is the duty of those in charge of the diet, to see that those requirements are met. At three or four years, milk is still the basis of the diet. One quart a day is a suitable amount for most children, though it does not all necessarily have to be taken as plain milk. A portion of it, with the cream from the top, may be used for any number of cereals at breakfast and again at supper, or it may be used for milk toast. At the mid-day meal, milk can again be used in making an appetizing and nutritious vegetable soup, and another portion for a simple dessert, as junket, plain baked or boiled custard, rice and bread puddings, and blanc manges. In this way, the child is given milk in a variety of forms. At the same time he is supplied with some fat and carbohydrates, as well as with a good proportion of protein, or tissue-building material, of excellent variety. The addition of one egg —the yolk being the essential part—a day to the diet is another good source of protein. As to the preparation of eggs, they may be soft-boiled, soft-poached, or coddled—never fried in fat at a high temperature or allowed to stand in fat.

*(To be continued)*

# Recipes

## Cream of Vegetable Soup

¼ cup diced onions
½ cup diced carrots
¼ cup diced turnips
½ cup peas
1½ cups milk
4½ cups water
3 tablespoons butter
3 tablespoons flour
Salt

Boil the vegetables until tender, drain, saving the water, and press vegetables through a purée sieve. Melt the butter, add flour, milk, water from vegetables and puréed vegetables. Reheat and serve.

## Cabbage au Gratin

1 small head cabbage
½ cup bread crumbs
2 tablespoons butter
2 tablespoons flour
2 tablespoons butter
1 cup milk
Salt

Cut cabbage in quarters, boil until tender and chop fine. Make a white sauce by melting the butter, add flour, salt and milk slowly. Place a layer of cabbage in an oiled pan, cover with a part of the white sauce, repeat until cabbage and white sauce are used. Cover with buttered bread crumbs and bake 25 minutes in a moderate oven.

## Cheese and Peppers

3 green sweet peppers
¾ cup cottage cheese
6 eggs
¼ cup cream
Salt

Parboil peppers seven minutes and chop. Press the cheese through a colander and add peppers, cream, beaten eggs, and salt. Pour in oiled ramekins and bake in moderate oven.

## Sweet Potatoes au Gratin

1¼ qts. boiled sweet potatoes sliced
½ cup brown sugar
5 tbsp. butter
¼ tbsp. bread crumbs
Salt

Place a layer of sweet potatoes in an oiled pan, sprinkle with salt and sugar, and dot with butter. Repeat, cover with buttered bread crumbs until browned.

## Nut Bread

2 eggs
1 cup sugar
1½ cups milk
4 cups flour
1½ cups Eng. walnuts
4 tbsp. baking powder
½ tsp. salt

Beat the eggs and add sugar. Mix and sift together the flour, salt and baking powder, and add alternately with the milk. Last add slightly chopped English walnuts. Oil 1 lb. baking powder cans, fill ½ full, let stand 20 minutes. Then bake in a moderate oven.

## Economical and Delicious Ice Cream

Ice cream can be made without fresh cream, milk, eggs, sugar or gelatine, if made with Borden's Eagle Brand Condensed Milk and Borden's Malted Milk and water. Its dependability is unquestionable.

The following recipe will make about ten gallons of ice cream of standardized quality and food value, any time desired, winter or summer, thereby especially suitable for hospital, sanitarium and institution use. It costs about one-quarter as much as ordinary ice cream, and contains twice the food value. It makes the dietitians independent of any milk or sugar shortage, besides supplying a safe, clean and reliable convalescent food at all times.

Dissolve eight pounds of Borden's Malted Milk in 15 quarts of boiling water, being careful to dissolve thoroughly. Add 25 pounds of Eagle Brand Condensed Milk, which has been dissolved in six quarts of cold water. Thoroughly mix and flavor to suit, with vanilla, chocolate, or any flavor desired. Again mix thoroughly, strain through a fine strainer, and freeze in the usual way, being careful to turn the freezer very slowly.

# Mrs. Ella Eaton Kellogg

The death of Mrs Ella Eaton Kellogg, wife of Dr. John Harvey Kellogg, occurred at her home in Battle Creek on June 14, 1920. Thus was ended a service of forty-three years to the readers of GOOD HEALTH. Thus also was ended a life whose energies were unstintingly poured out that humanity might be bettered through knowledge.

Those who have regularly attended the school which she taught in the pages of this periodical, will have a clear conception of one side of her life. They will know that her endeavor was to lessen suffering, disease, and unhappiness through the spreading of enlightenment. She felt that great burdens could be lifted from the race if only ignorance could be banished. With education, too, she coupled character.

The early bent of her mind is shown by the address which she gave at her graduation from Alfred University at the age of nineteen. Its subject was "Whither?" In the weekly newspaper of the place was recently printed this account of what she said:

"After showing something of the failure and disorder of empty lives, Miss Eaton beautifully pictured the shining path and the increasing glory of consecrated living and the noble impulse that every true person gives to a natural life.

"These ideals were part of her own self. Empty her life never was. Always it overflowed. Consecrated living and noble impulse were the order of her days."

Through her writings in GOOD HEALTH and in other magazines and in her books, she reached larger audiences. Here in itself were justification for calling hers a very fruitful life. But in her oral teaching and in her part in the upbuilding of the great Battle Creek Sanitarium, she had another career which has been broadly helpful. In her public activities, such as the Women's Christian Temperance Union,

ELLA EATON KELLOGG

the Young Women's Christian Association, the American Home Economics Association, she likewise accomplished a work with far-reaching effects. But those who knew her personally will always place ahead of everything else the sympathy, the kindliness, the Christian helpfulness of her own private life, the forgetfulness of self in her efforts to replace the wrinkles of care with the smiles of contentment.

Mrs. Kellogg's work lay along the lines that come closest to woman's life —the care and education of children, the cleanly and orderly management of the home, the providing of a wholesome yet palatable dietary, the inculcation of health habits in all the activities of life, and above and beyond all this, the vital need of character and virtue. Perhaps her greatest single achievement was the present diet system of the Battle Creek Sanitarium, in the development of which she was the most important individual factor. Destructive criticism of bad foods had to come first, but was by itself of little effect. It was not enough to convince people that many of their customary dishes were harmful; you must replace these with others which absolutely had to be palatable. Here was the essence of the situation. The repast must suggest not the handing out of food medicine or medicinal foods, but those pleasures of taste which give to all of us a good share of life's joys.

For years, Mrs. Kellogg studied this problem and experimented with it. Day after day she cooked new dishes, varying the ingredients slightly until at last she came on the supreme combination which was fit to set before a king. Just how successfully she accomplished this endeavor is shown by the tens of thousands who are following the Battle Creek Sanitarium dietary daily in this and foreign countries.

The productiveness of her life may be measured from another angle—the enumeration of a few conspicuous biographical facts. As an outgrowth of her teaching of dietetics to nurses in the Sanitarium, she founded the School of Home Economics, which has grown into an institution of wide renown. She was also graduated from the American School of Household Economics. Her philanthropy took practical form in her part in the founding of the Haskell Home for Orphan Children in Battle Creek. Of this she was managing chairman for many years. Her connection with the Women's Christian Temperance Union was conspicuous for a long time. First she was superintendent of hygiene and later was the associate of Miss Frances Willard in the social purity department. Subsequently she became national superintendent of Mothers' Meetings and then superintendent of Child Culture Circles in the purity department.

Of the Young Women's Christian Association she was a life member; belonged to the household economics department of the Federation of Women's Clubs; was an associate member of the National Congress of Mothers; member of the American Home Economics Association and the Woman's League; charter member and honorary president of tion.
the Michigan Woman's Press Associa-

The books she wrote were: "Talks with Girls," "Science in the Kitchen" and Studies in Character Building."

Mrs. Kellogg was born at Alfred, in Western New York, on April 7, 1853, the daughter of Joseph Clarke and Hannah Sophia (Coon) Eaton. Her parents were Seventh Day Baptists and to this church she loyally adhered throughout her life. She attended the local school and academy until she was sixteen, intending to enter Alfred University in the fall. While her mother was in Wisconsin visiting relatives, her two younger sisters fell ill with whooping cough. There was a family council as to whether mother should be recalled, but the decision was that she should enjoy her holiday. The sixteen year old daughter had her hands more than full with the ordinary and extraordinary household cares, but the mother's pleasure in her vacation amply repaid all this. However, the whooping cough finally overcame the young housewife too, and in consequence she could not go to college that fall.

This disappointment, however, gave an opportunity for a display of character. Miss Eaton promptly secured the post of teacher at Five Corners, a hamlet five miles from her home. As there were sixty pupils, some of them older than herself and some of them rough and unruly boys, her task was no sinecure. One feature of her life was far from monotonous. She had to board with the parents of all her pupils in succession, spending three days for each child in her classes. For the season's labor she received $75 in cash.

Her university course she described as one long joy. She was fond of her teachers, interested in her studies and delighted with the association with her classmates. Some of her fellow-students achieved fame. Vandelia Varnum won renown on the Chautauqua platform. "Dan" Lewis was later New York State's Commissioner of Health. "Pete" McClellan became a judge of the Supreme Court of New York and George Utter was twice governor of Rhode Island.

Even at this time was evident that love for flowers, trees and the beauties of Nature which in later years was one of her strongest traits. As a freshman, she knew more botany than most of the seniors. "When you like a study, you can learn it easily," she explained.

When she was just three months beyond nineteen, she received the degree of A. B. for completion of the classical course. The president spoke of her as "the youngest Daughter of the University," since no one before had gained her diploma at so early an age, notwithstanding the year lost. In 1885, her Alma Mater conferred on her the degree of A. M.

The bent of her mind was toward teaching, and when her A. B. was attained, she took charge of a community school at Harmony, N. J. She had sixty-five pupils in her room, but she enjoyed her work. Three years more she taught, and then came a providential happening which utterly changed the course of her life. It was one of those instances, happily not uncommon in human experience, in which an apparent misfortune was turned into a great blessing.

She made a summer visit to an aunt who lived in Battle Creek. A sister came with her. A fortnight after their arrival, the sister fell ill with typhoid fever. The aunt lived near the Sanitarium and was a firm believer in its system of treatment. So she summoned a physician from the institution, Dr. Kate Lindsay, to attend the patient. The sister promptly installed herself as nurse. At first she was opposed to the water treatment, but she loyally carried out instructions. Under this joint care of doctor and nurse, the young girl was soon convalescent.

At this time there was an epidemic of typhoid fever in Battle Creek. Nurses were exceedingly scarce, and Dr. Lindsay urged Miss Eaton to help in the emergency. She had intended to return home September first, but obeyed what she felt to be the call of duty. Several sick persons were under her care in succession, the last of them a young woman student. It was while in attendance on this patient that Miss Eaton first met Dr. Kellogg.

The patient was desperately ill, but finally was well on the road to recovery. Her nurse, tired out with her labors, went to her aunt's home for a rest. One Saturday evening she was packing her trunk preparatory to returning to Alfred, when she received a call from the patient's brother. He told her that his sister had had a serious relapse and that Dr. Kellogg had said that the only hope of saving her life was to get Miss Eaton back on the case. The trunk was unpacked and three weeks of strenuous nursing were put in at the bedside of the young woman. She was then out of danger.

Dr. Kellogg was at this time just starting a school of hygiene. Miss Eaton was urged to enter this school, and decided to do so, and after a visit home, returned to take up that connection with the Sanitarium which ended only with her death. Shortly after her arrival, Dr. Kellogg, aware of her education and recognizing her gifts, asked her to help him in conducting GOOD HEALTH, of which he had been for several years the editor. She took up the work with her usual enthusiasm and continued it the rest of her life. Even on her death bed, she kept up her labors. The article by her in the present number of this magazine was sent in shortly before the end came. At times in these long years she has borne a large part of the responsibility of the make-up of the monthly contents.

For some months after the beginning of the grave illness which terminated her life, she conducted the Mother's Department in GOOD HEALTH, which had been her special charge.

On February 22, 1879, she was married to Dr. Kellogg. The clergyman who officiated then, Elder L. McCoy, also took part in the services at her funeral.

The activities of the next four decades of her life have already been indicated. At intervals for thirty years, she taught cookery and domestic science in the Sanitarium. She wrote a good deal and was occupied with various philanthropic movements. The conduct of a large household took up a considerable share of her time and thought. Even if her horizon was wide, she treasured the opportunities and obligations of her home life. The lawn, the garden, the flowers and the park at her house were a continual source of occupation and pleasure. Through the open months, she gave personal care to these growing things. Even in winter she would plan improvements and the trial of new varieties. This delight in Nature gave a keen interest to her travels, in this country and abroad. Journeys were not monotonous to her. There was always something to see, animate or inanimate.

The malady which terminated her life had its beginnings when she was quite young, scarcely more than twenty years of age, and has been a constant handicap throughout her whole life, although combated by every means known to medical science, and by constant and special effort held in check until a little more than a year ago, when a pronounced failure of the vital forces marked the beginning of the final struggle.

Fortunately, her last hours were peaceful and not attended by great physical suffering, and her mind was clear almost to the last hour of her life. H. M. S.

# Country Life for the Young Child

## MRS. E. E. KELLOGG

Fortunate indeed is the child who makes his start in life in the country, surrounded by the scenes and sounds of Nature, rather than amidst the din and noise of the man-made city.

The nervous system of the young child is as feeble and undeveloped as his strength and muscular powers. Quite as great care is needed for its proper unfolding as for the development of any other of his bodily functions. Sleep is absolutely essential to growth and to nerve tone. The best conditions for restful, sound sleep are pure, fresh air and quiet. Both these conditions are more easily secured in country than in city homes.

It is particularly important that the nervous organization of the growing child be not unduly stimulated by excitement of any kind. Evening entertainments, children's parties and similar gatherings are objectionable because of their injurious effect through undue stimulation and late hours.

As a rule, health and consequently happiness in later years depend upon a quiet, simple, natural life for the child in the first years of his existence.

Contact with Nature stimulates the imagination far more than can the pent-up life of the city. Spring and summer in the country are special seasons of gladness, for things are growing; flowers and bushes and trees are continually coming into bloom, each lending its own charm for the pleasure of the child.

So much has been said and written regarding the value of fresh air that parents are realizing more and more keenly the importance it plays in the health of the child. Parents, indeed, cannot recognize too keenly the effects of Nature upon the serenity of young life. Even before the child can walk mother can make him comfortable out of doors, where he can watch the blue sky and waving trees and listen to the singing birds and look upon the green grass and gaily colored flowers in their own secluded yard or in some parklet or woodsy nook. A child thus placed amid the beauties and harmonies of Nature will be far more likely to develop a serene and happy disposition than one whose early months are continuously spent amid human environments.

Nature's resources are so abundant that the country child is never at a loss for material with which to play. Maple leaves pinned together supply charming hats and belts and aprons. Daisy chains, dandelion curls, and corn-silk wigs provide fascinating adornments. Stones placed end to end may mark the boundary for wonderfully arranged and furnished playhouses. A game of hide-and-seek played among the cocks of new-mown hay is intensely interesting. And if there be a brook near by, the dams and canals and bridges which may be fashioned are enough to captivate any boy's heart.

Not every child is so fortunate as to have this ample space and opportunity to play in Nature's own realm, but even the few yards of earth available to residents in town homes may, by careful planning, be arranged to furnish the children many resourceful opportunities for outdoor occupation.

Even for the little ones who dwell in flats, several stories up, there are often porches or roofs where out-of-door living may in a measure substitute for better conditions; while there are always the parks and in many places playgrounds to bring Nature near to the city-bound child.

# MEDICAL PROGRESS

# The Pollens in Hay Fever

WILLIAM SCHEPPERGRELL, A.M., M.D.
New Orleans, La.
President of the American Hay Fever Prevention Association; Ex-President of the American Academy of Ophthalmology and Otolaryngology; Chief of the Hay Fever Clinic, Charity Hospital.

Now is the season when the shadow of coming misery falls like a pall upon the spirits of the hay fever victim. As a matter of interest and encouragement to such sufferers, the following paragraphs are quoted from an article that appeared under the above title in the *New York Medical Journal* of August, 1919. The author has kindly loaned to GOOD HEALTH the accompanying illustrations.

"Those of us engaged in the research work of hay fever have passed through the successive stages of the investigations establishing the relationship of pollen to hay fever. These facts having been substantiated as definitely as the relation of the plasmodium to malaria, the comma bacillus to cholera or the tubercle bacillus to tuberculosis, we have given our attention to other matters, such as the proteolytic action of the cells and immunizing methods, overlooking the fact that the rôle of the pollens is still *terra incognita* to many who are not familiar with these investigations. That the causative relation of pollens to hay fever is not yet well understood, even by the medical profession, is demonstrated by statements made in our most prominent medical journals, in which hay fever is called a mysterious disease of unknown origin, and the influence of the pollens doubtful.

"Were it only a question of treatment, such statements would have little effect. In applying for immunizing treatment at the hay fever clinic of the Charity Hospital, the patients are little concerned regarding the influence of the pollens, as long as they are benefited by the treatment. The real harm is in the effects of such statements in the preventive methods against hay fever. The entire campaign against this disease in all parts of the country, and the enactment of grass weeds laws for its prevention, is based on the etiological rôle of the pollens in hay fever. To dispute or disparage this is to discourage such efforts and to reduce public cooperation, without which such measures cannot be successfully enforced. It is, therefore, a matter of importance, at this time, to review the facts which have definitely established the relation of pollens to hay fever.

"The term hay fever has been considered a misnomer, as it is not due to the effects of hay as formerly supposed. On this account the word pollinosis is sometimes used. The words hay fever, however, represent a combination of symptoms well-known to the public, and the fall hay fever develops about the time of the hay-making season. No one has suggested the changing of the name of malarial fever, because the bad air (Italian *mal,* bad, *aria,* air) is no longer considered responsible. For these reasons, the term hay fever has been retained in our reports.

## Botanical Proofs

The simplest method of demonstrating the relation of pollen to hay fever is by watching the rag weeds, the principal cause of fall hay fever in the Northeastern and Southern States. As soon as these weeds reach the stage of pollination, the first active wind distributes the pollen into the air, and fall hay fever develops at once in susceptible subjects within the potential area of these plants. When the pollination of the ragweed is over, either by maturity or the effects of a frost, fall hay fever at once disappears over the affected territory. Before the establishment of more scientific methods, the field observations of the ragweed formed the basis of reports, in the laboratory of the American Hay Fever Prevention Association, of the beginning and ending of the fall hay fever season.

"The beginning of the spring-summer hay fever season may also be observed in this manner, but the relation is not quite so apparent. The principal cause of this form of hay fever is the pollen of the grasses. These vary from thirty to eighty microns in diameter (Fig. 1) as compared with fifteen microns in the common ragweed (Fig. 2), and they have therefore a much more limited potential radius. On account of the buoyancy of the ragweed pollen, it usually is distributed uniformly over a large area, and the development of the fall hay fever season is fairly uniform. With the grass pollen, however, on account of its lesser buoyancy, the infestation varies greatly in different localities, resulting in considerable variations in the time of the beginning and ending of the resulting hay fever.

"That the goldenrod is not responsible for hay fever is demonstrated by the fact that many varieties bloom before the opening of the fall hay fever season and the Canadian goldenrod, *Solidago canadensis,* is the most conspicuous flower for three or four weeks after the hay fever season is over.

## Personal Demonstration

"For many years, our reseach work in hay fever was conducted at Laurelia, the author's summerhome near Asheville, N. C.; when it was decided to open the campaign against hay fever in New Orleans, we found a community skeptical as to the relation of pollen to hay fever, which was considered, as in the case of some of our contemporary medical confreres, a mysterious disease of unknown origin. It was during the middle of August in 1916, when the giant ragweed, *Ambrosia trifida* (Fig. 3), which in New Orleans replaces the common ragweed, *Ambrosia elatior* (Fig. 4), the principal cause of hay fever in other sections, had just commenced to pollinate. A party of investigators was arranged, including a college professor and a public accountant, both of whom were fall hay fever subjects. These were taken in an auto to the suburbs, and escorted to a field with a fine crop of the giant ragweeds in the pollinating stage. Within five minutes, both of the hay fever subjects had developed severe attacks of hay fever, which in one of the cases lasted until the following morning. This method of demonstration, while rather radical, has been utilized in numerous instances, and has been a convincing factor in educating the public in the causative relation of the pollens to hay fever.

## Inhalation Proofs

"The most conclusive proof of the relation of pollens to hay fever, is in the inhalation test. If a fall hay fever subject (Eastern and Southern States) is allowed to inhale the ragweed pollens, an attack of hay fever is invariably produced, the intensity and duration of the attack depending upon the number of pollens inhaled. Not only may this reaction be produced during the normal hay fever season, but

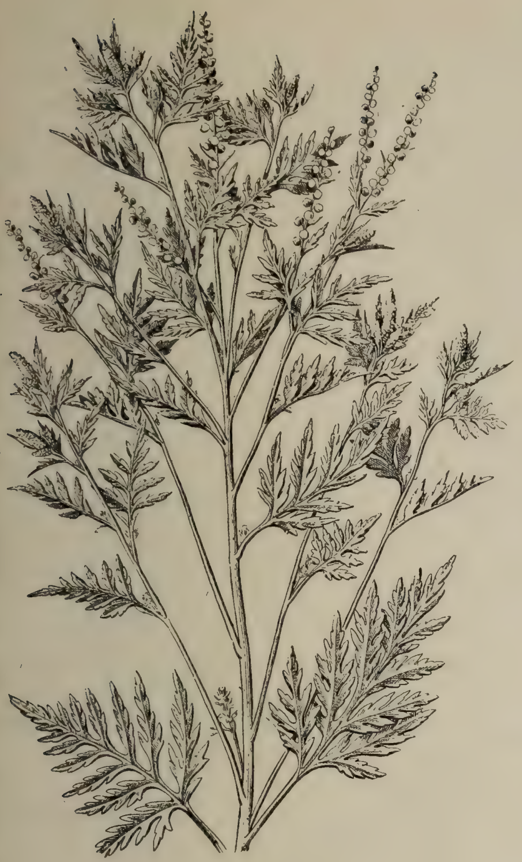


FIG. 1. Common Ragweed, *Ambrosia elatior*, the principal cause of fall hay fever in the United States. It is not found in Europe, which is therefore free of fall hay fever.

at any time of the year. This is therefore a most convincing evidence of the etiological relation of the pollens to hay fever. All the most common pollens are kept in the laboratory of the American Hay Fever Association, and this test is used as a check on other methods of diagnosis.

## Ophthalmic and Dermal Tests

"The effects of the pollens on susceptible subjects may not only be demonstrated by inhaling the pollen, but also by applying it to the conjuctiva, or to the scarified skin. For practical purposes, however, such as in testing the sensitization of the patient or for developing active immunization, the extracts of the pollens are used.

## Various Forms of Hay Fever Reactions

"There are various forms of hay fever due to reactions to different pollens. Many persons, for instance, who are sensitive to the grass pollens and have hay fever in spring and summer, are not affected by the ragweed, and therefore do not suffer from fall hay fever, and *vice versa*. Persons in California, for instance, who suffer from the wormwoods, *Artemesias*, may not be sensitive to the ragweed, and therefore are relieved in the East, while in persons East, who are not sensitive to the ragweed, hay fever may develop from the pollens of the wormwoods. The ignorance of this distinction is one of the causes of calling hay fever a mysterious disease.

## Characteristics of Hay Fever Pollens

"Before explaining the more scientific methods of determining the relations of pollens to hay fever, it is well to explain what kinds of pollens may cause hay fever. The only plants that need be considered in connection with hay fever are those that are wind pollinated, which means that fertilization is effected by the pollen being distributed by the wind, and the atmosphere infested with the pollens in this way. In insect pollinated plants, the pollen is not carried into the air, and it can cause hay fever, if at all, only by direct application to the nostrils. The characteristics of wind pollinated plants are that their flowers are inconspicuous, wihout bright color or scent, and the pollen is formed in great quantities. This is noticeably the case with the ragweed and grasses. All wind pollens, however are not responsible for hay fever, as for instance, those of the pines, whose pollen is formed in enormous quantities.

## Scientific Methods

"For the past four years, the physical reports of our laboratory have been based on the records of our atmospheric pollen plates. These are glass slides, coated with a thin film of glycerine, which are exposed in the open air. A definite proportion of the atmospheric pollens are deposited on these plates. These pollens are stained, and traversed before the field of the microscope, and counted on a basis of the number to the square centimeter. By means of a table, based on the diameter of the pollens, their number to the square yard of air can be determined. These plates are exposed at various stations, and at all seasons. The approach of spring-summer and fall hay fever is determined as definitely as by a field inspection or the clinical reports. When the ragweed pollens, for instance, begin to be deposited, the fall hay fever season is at hand, and as soon as the pollens reach a definite number, numerous cases are reported. These records and the clinical reports of our hay fever clinic synchronize at all seasons.

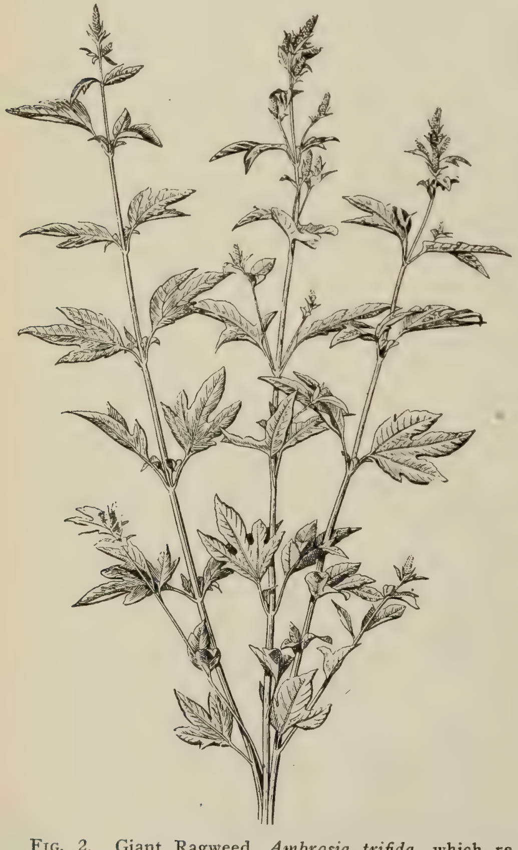


FIG. 2. Giant Ragweed, *Ambrosia trifida,* which replaces the Common Ragweed on the Gulf Coast, and in moist regions generally.

## Effects of Wind and Rain

"It is well known that hay fever patients improve during a rain of several days' duration, and that their symptoms become more marked during the prevalence of high winds. The former is due to the fact that pollens floating in the atmosphere are precipitated by the rain and that no more pollen rises until it ceases. This has been clearly shown by our pollenometric records. During high winds, on the other hand, not only are more pollen grains shaken from the plants, but the liberated grains are carried to proportionately greater distances. These records also demonstrate that there is a definite relation between the wind velocities and the amount of pollens in the air, the clinical reports proving that there is a similar relation between the resulting pollen in the air and the symptoms of hay fever subjects.

"Our clinical records show that the most severe symptoms of fall hay fever were on September 29th, 30th, 31st, and October 1st, which corresponds with the high wave of the recorded pollen count. After the nostrils have become irritated by a large number of pollen grains, they become sensitive to a smaller number than under ordinary conditions. Thus, each period of increased hay fever was followed by symptoms in excess of the record of the pollen counts. As will be noted, these counts are influenced not only by the wind velocity, but also by its direction, this being regulated by the locality of the nearest large weed areas. September 22nd, there were eleven pollen grains to the square centimeter with a wind of ten miles from the northeast, while on September 25th there were only seven, with a wind of fourteen miles from the southeast.

"Toward the latter part of October, the pollination of the ragweed was reaching its limit, which explains the irregular count after October 15th. October 29th, the ragweed pollens were no longer recorded on our plates, and clinical records show that the fall hay fever season has passed. The effect of rain on the pollen was also clearly indicated. October 17th, the rain of 2.58 inches caused the ragweed pollen to disappear from the plates during that day, and also the following one in spite of the fact that the wind had reached a velocity of twenty-four miles an hour and was from a northerly direction. Local showers have little effect, as shown on September 26th and 28th, and October 5th, 6th, and 7th.

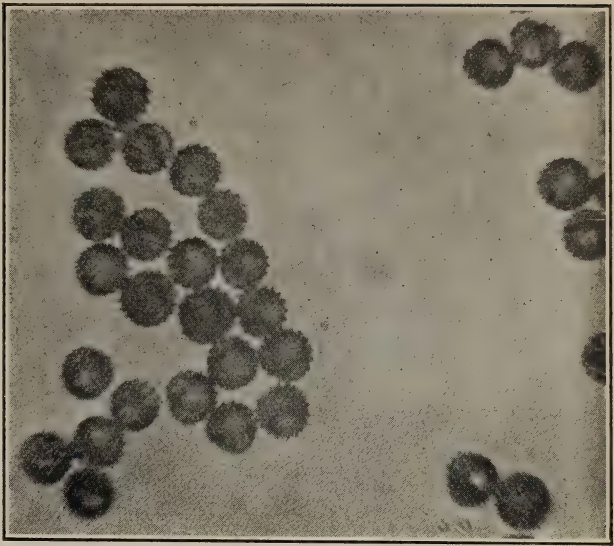


Fig 3. Pollen of the Common Ragweed. Its buoyancy gives it a large potential area.

## Effects of Occupations

"In one of the leading papers of the country, a satirical article appeared on the subject of hay fever pollens. It stated that it was remarkable that the 'city youth, who remains in his office all day and never sees a ragweed,' is the greatest sufferer, while the hayseed who lives among the weeds, is never affected. The article was quite amusing, but unfortunately was not based on facts. The ragweed pollen is very buoyant, and, under favorable wind conditions, will traverse several miles of territory, so that the proportion of this pollen in cities, is usually quite high, and hay fever proportionately common. Regarding the immunity of the farmer from hay fever the *questionnaire* of the United States Public Health Service in Louisiana in 1916, demonstrated that the highest rate in Louisiana was among the farmers, being thirty-eight per cent of all cases.

## Hay Fever and the Sea Coast

"Considerable comment has been made on the apparently erratic development of hay fever on the sea coast. A patient will remain at one of these resorts for a week, and be entirely free of hay fever. During another visit, he will have attacks every day. The apparent irregularity of hay fever in these cases forms an excellent confirmation of the relation of pollen to hay fever. Our atmospheric pollen plates have shown the self-evident fact, that when the wind is from the water there are no pollens in the air, which explains the absence of hay fever. When, however, the wind is from the land, which in most places is infected with hay fever weeds, they have shown an abundance of pollen and, consequently, hay fever is common. This relation has been demonstrated in numerous instances and is easily confirmed.

## Corn and Hay Fever

"Since the pollen of the grasses is the principal cause of summer hay fever, comment has been made that corn, which, botanically belongs to the grass family, is so rarely the cause of hay fever. We have demonstrated that the pollen of all the grasses, while differing in degree, have a similar hay fever reaction, and this also applies to the corn. Its pollen, however, is relatively very large, being eighty microns in diameter as compared with fifteen microns in the ragweed. As a result of this, the potential radius of the corn is limited. Under wind conditions that

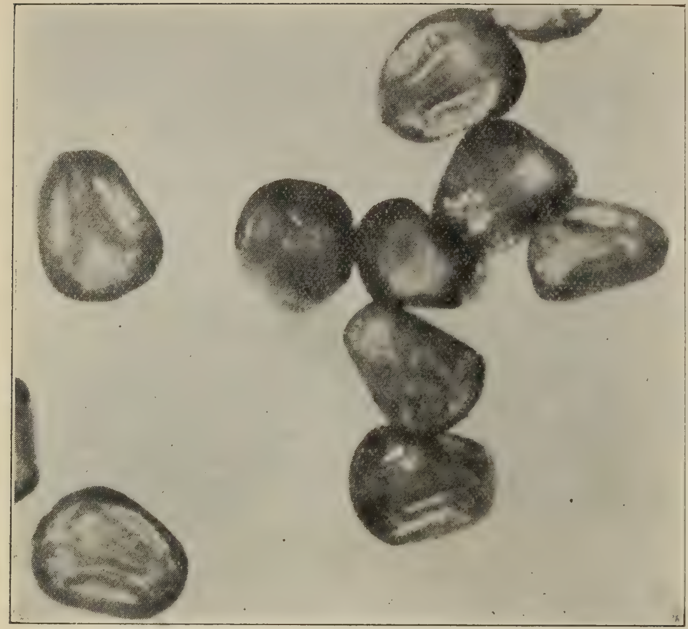


FIG. 4. Pollen of Johnson Grass, *Andropogon halepensis*. The grass pollens are the principal cause of summer hay fever in the United States and Europe.

would carry the ragweed pollens nearly a mile, the corn pollen would traverse only fifty-four feet. In fact, under ordinary conditions, the corn pollen may be seen falling almost perpendicularly, while the ragweed pollen floats off into the distance in such a manner that many farmers refer to it as smoking. The cause of the rarity of hay fever from corn is therefore apparent. It is well to remember, however, that planting corn in the back yard of patients subject to summer hay fever, may bring them within the potential area of the pollens and should therefore be avoided.

### Atypical Forms

"In addition to the typical forms of hay fever, we have occasional cases due to other proteins, the most common being the dandruff of horses. These form less than one per cent of our total number of cases. These patients rarely require treatment, the advice usually being to avoid the specific exposure. In one of these cases, a private in the artillery, which brought him in contact with horses, the attacks were accompanied with asthma, which necessitated the patient's transfer to the infantry branch of the service.

### Conclusion

"To those engaged in hay fever work, and who are daily noting the direct relation of the number and varieties of atmospheric pollen to the recurrences and varying intensities of hay fever attacks, the review of the facts on which the relations of pollens to hay fever has been established, may appear superfluous. The recrudescences, however, of literature, indicating ignorance of these investigations, is still sufficiently frequent to justify the enumerations of the essential facts. When these have become well recognized, the campaign for the control of hay fever weeds will receive a new impetus, with corresponding benefit to the large army of hay fever sufferers."

# The Carbohydrates of the Soy Bean

Recent studies of the soy bean indicate that it is an excellent food for diabetics. The earlier analyses show that this bean contains 20 to 30 per cent of carbohydrates. Recent analyses, however, have shown that these carbohydrates are not starch, of which the bean only contains a trace, but are chiefly made up of other forms of carbohydrates which are not converted into sugar in the body.

Bailey and Street (Engineering Chemistry, 1915), find cane sugar 3%, invert sugar and raffinose 1.2%, starch 0.5%, dextrin 3%, in the soy bean. These are the only constituents of the soy bean that would be objectionable in diabetes.

## Operations on the Thyroid Gland

Kendall has shown that when a portion of the thyroid gland is removed, the remainder is changed in appearance and becomes similar to the gland in cases of exophthalmic goiter. It is well known that the thyroid degenerates in old age. Degeneration is, in fact, one of the causes of senility. This being the case, it is important that the gland should not be unnecessarily sacrificed, since sooner or later every person comes to the point of needing all the thyroid gland he possesses and a little more. In the operation for exophthalmic goiter it sometimes occurs that not more than one-tenth of the entire gland is left behind. It seems clearly evident that in such a case the time when the thyroid gland becomes insufficient to perform its necessary function will arrive sooner than if no portion of the gland had been removed or if a smaller amount had been sacrificed.

Before removing the gland, an effort should be made to ascertain and remove the cause of the disease. This will generally be found to be located in a neglected colon. The poisons from putrefying food residues absorbed into the blood overtax the gland, the function of which is to destroy poisons. The overwork leads to enlargement and disturbance of the function.

## The Eyesight of Mammals

According to Stefanson, the Arctic explorer, the sight of wild animals is much less keen than that of human beings. He says in *Harper's Magazine,* May, 1919:

"No mammal known to me has eyesight which at all compares with that of man. A wolf can see you under favorable conditions a little more than a mile away; a caribou at a little more than a quarter of a mile; and a seal commonly at about three hundred yards if you are standing up, or one hundred and fifty to two hundred yards if you are lying down. You can walk unconcernedly towards a seal until less than four hundred yards away, after which you begin a careful approach."

## Fodder and the Milk Supply

The Minnesota Agricultural Experiment Station has been investigating the influence of the diet of cows upon their milk. It has been found that the milk produced by cows fed on dry fodder and grains is less nutritious than that produced when the cows are pastured on green grass, and infants fed on milk from cows on dry feed are more liable to suffer from scurvy. The reason for this is doubtless that the source of the vitamins found in milk is in the green grass eaten by the cow.

It has been found that the drying, or evaporating of foods has a very destructive effect upon the vitamins contained in them, consequently the lack in the milk of cows fed on dry fodder. Fortunately, the well-managed silo offers a solution of the difficulty, providing green fodder for the cow at all seasons.

## Cancer of the Lip Increasing

Dr. William J. Mayo, in an address at the Clinical Congress of the American College of Surgeons held in New York City last October, called attention to the fact that cancer of the lip and tongue are increasing, and this increase runs parallel with the increase of smoking in both sexes. The male victims of cancer of the lip and tongue far exceed the female victims, for the reason that as yet by far the greater number of smokers are to be found among men and boys.

## Decay of the Teeth in Expectant Mothers

Dr. Ballantyne, of Edinburgh, reports in a medical journal the results of a systematic examination of the teeth of 100 patients attending the antenatal clinic in the Edinburgh Royal Maternity Hospital. He found that of the hundred expectant mothers drawn from by no means the poorest class, most of them enjoying a fair measure of health, and more than half under twenty-five years of age, ninety- eight had more or less defective teeth.

# PUBLISHER'S LETTER BOX

### A Life Subscriber

MRS. F. M. LEE,

*3307 Brazos St., Houston, Texas.*

"In renewing this subscription I wish to say that while I have very little time for reading magazines of any kind, I never fail to read everything in GOOD HEALTH every month, as I find it invaluable to me in maintaining my health, and I think you can count on me as a life subscriber. I have already been taking the paper now for six or seven years, I believe, and consider it one of my most profitable investments."

### Young at Eighty-Two

IDA E. FALLASS,

*Petoskey, Mich.*

"I first went to the Battle Creek Sanitarium in September, 1897, remaining until the latter part of March, 1898. On leaving the institution I equipped myself with everything possible to continue the treatment at home, among which was a subscription to GOOD HEALTH. That I am still a subscriber is sufficient that I consider its teachings very valuable, progressive and up-to-date. It has saved many doctor bills for myself and family and I might add for my neighbors. My mother, who is eighty-two in January, went to the Sanitarium three years ago. She received great benefit and today is the youngest in the family. Her good health is entirely due to the treatment received there and which she continues to follow up."

### Would Not Miss One Number

EMMA F. HENCH,

*Fordyce, Ark.*

"Enjoy your magazine so much that I would consider it a deprivation to miss a single issue."

### Once a Subscriber, Always One

MRS. ALONZO SPRINGER,

*Perry, Iowa.*

"Enclosed find check for one year's subscription to GOOD HEALTH. This magazine means much to me, and during the past year I have influenced many persons to subscribe for it. My magazines are loaned out constantly; when one brings them back, another gets them. It takes some time to see just what GOOD HEALTH means to the woman of the house, and when they once order it, they wouldn't be without it."

### Valuable Food Information

G. W. ROOD,

*Lapeer, Mich.*

"I will say I think the GOOD HEALTH Magazine is the most useful periodical published, because of the knowledge it gives its readers in regard to the food we eat."

### The Right Idea

REV. JOSEPH HELLER,

*E. Pleasant Plain, Iowa.*

"I take great pleasure in expressing my fullest appreciation of GOOD HEALTH. I believe that fully 75 per cent of human ailments are due to mal-nutrition caused by a faulty diet. GOOD HEALTH deals largely with this very phase of diseases and is, therefore, a work of the highest merit. Let us learn to understand the processes of digestion and eat accordingly, and our bodies will be healthy."

### The Doctor Reads It

DR. MARGARET PATTERSON,

*Toronto, Ont., Can.*

"I want to tell you how much pleasure and profit I derive from GOOD HEALTH, and would not like to be without it."

GOOD HEALTH

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# EDITORIAL DEPARTMENT

## Hot Weather Diet

Our bodies are kept warm in the same way as our houses, by the burning of fuel.

Food is fuel.

There are different kinds of fuels—quick-burning fuels, like oil, resin, pine knots and kindlings, which make a hot fire; other fuels which, like hard coal and hard wood, burn slowly.

The same is true of food fuels.

Meats of all sorts are quick fuels. They burn quickly and produce an excessive degree of heat. This is why meats and foods rich in protein, such as beans, are known as "heating" foods. It is for this reason that meats, which are unnecessary at any time, should be especially avoided in summer.

Hearty meat-eating is a most prolific cause of summer overheating.

Fats should be sparingly used in summer, for the reason that they slow the digestive process, hindering the food from leaving the stomach, and besides, encourage autointoxication by promoting putrefaction in the colon.

Starches and sugars as found in fresh fruits and vegetables, with greens, salads and other green stuffs and "fresh" foods, are the foods par excellence for summer.

And don't forget liberal doses of bran at every meal,—two tablespoonfuls, to encourage the clearing of the colon and so to prevent biliousness, loss of appetite, headache and all the miseries that come from neglect of colon sanitation.

When the colon is permitted to become a sewer, a cess-pool, a reeking mass of putrefying residue, the blood is polluted with putrefaction products, the resistance is lowered, the tongue coated, the breath bad, and the whole body languishes.

One more point: Drink two or three quarts of water every summer day, including the liquid foods taken at meal times, but don't drink freely at meals, especially ice water, which is unwholesome, Dr. Hawk to the contrary, notwithstanding.

# Tainted Meat

Dr. C. V. Chapin tells us in *Public Health* that "meat with a taint is no more likely to cause disease than meat which seems perfectly sweet."

This is highly valuable information from so eminent an authority as Dr. Chapin, a member of the Advisory Board of the *American Journal of Public Health.* It is worthy of credence and should be brought to the attention of everybody. The real force of the statement, however, does not appear until we reverse the order of the sentence without changing its significance. Changed thus, the sentence would read: Meat which seems perfectly sweet is just as likely to cause disease as meat with a taint. This is no doubt true, and hence it is, as Dr. Chapin maintains, quite inconsistent for the inspector to seize and destroy tons of tainted meat which "many people, not too finicky, would be glad to eat, if allowed," while leaving untouched great quantities of meat which seems perfectly sweet.

Of course, Dr. Chapin knows that all meat offered for sale in the public markets is undergoing putrefaction, and in meat from animals recently killed, the process is only fairly begun, whereas in meat which has been kept in storage for a long time, is far advanced; and this is true even of cold-storage meat, the difference being that the process of decomposition is slowed at low temperatures and the peculiar products which give rise to the "taint" of meat are not produced by the putrefactive changes which take place at low temperatures.

The lesson to be drawn from these facts, however, is not that tainted meat is harmless, but that the difference between tainted meat and meat that seems to be sweet is ordinarily not great enough to make the difference in effects noticeable.

Dr. Chapin doubtless knows that meat which seems to be perfectly sweet, as well as meat which is tainted, is swarming with putrefactive bacteria. If the same bacteria present in meat were found in milk, even in one-tenth the numbers, the milk would be instantly condemned by any sanitary inspector. Why should putrefactive germs in meat be considered harmless and recognized as pernicious and dangerous in milk?

The reason why meat which seems sweet is no more wholesome than that which is tainted is that even the freshest meat, or at least the undigested residues of the meat, quickly reach an advanced stage of putrefaction in the colon. So the final outcome is the same whether the meat is tainted or seemingly fresh. Of course, it is to be remembered that meat which seems to be sweet is never free from putrefaction, and hence readily undergoes active putrefactive changes when it reaches the colon.

# Herbert Spencer's Invalidism

Herbert Spencer, notwithstanding the colossal work which he accomplished, was a life-long invalid. It was probably this fact that led him to write his most useful work, "Physical Education." Spencer sought by various means to improve his health, but apparently without further success than to enable him to do a very limited amount of daily work. It is said that in his last years he was enabled to do only a very little literary work each day by spending several hours in rowing, and he himself states that for a great part of his life sound sleep was unknown to him. He slept only in snatches, averaging not more than four or five hours of unconsciousness, and for twenty-five years he did not know the sensation of drowsiness. His endurance was so small that he "never got beyond three hours' work a day without mischief."

He was particularly susceptible to colds, and had many rather long periods of almost complete inaptitude. If he took a rather long pedestrian tour, as he sometimes did, he suffered with "inertness of the brain," which made mental work difficult. Even early in life, he complained of "depression of spirits," with the apprehension that his mind powers were depreciating, and that his memory was failing.

The description given of Mr. Spencer's malady by himself and his biographers indicates very clearly that he was suffering from intestinal toxemia.

After having tried without success many other measures, he finally adopted the vegetarian regimen. After following the new way in diet for a few weeks, he wrote to his mother as follows: (*The Scientific Monthly,* June, 1920.)

"As I have felt no inconvenience during these first few weeks, I do not suppose I shall now do so. I think I have felt the cold more keenly than I should otherwise have done, and I find others who are trying the experiment make the same complaint. I believe, however, that this result is merely temporary. Meanwhile, I am in all respects well and strong."

Unfortunately, his experiment with the fleshless regimen was not a success. He further says:

"I was willing to persist in vegetarianism, had I been encouraged to do so by further results. My skepticism was first aroused, however, by the fact that after six months' abstinence from animal food, our friend Loch gave evidence of a lowered condition. His voice had become extremely mild and feeble, and he had partially lost power over one of his feet in walking. Writing, as it seems from my father's dating, towards the close of May (for I had not dated the letter myself), I said, 'I have about decided to give up vegetarianism, at any rate for the present. I think this relaxation under the eyes is due to it.' The clearest evidence, however, that I had been suffering, was disclosed afterwards. I found that I had to re-write what I had written during the time I was a vegetarian, because it was so wanting in vigour."

Some years ago, a friend told the writer that on one occasion when Mr. Spencer was dining at his father's table, the subject of vegetarianism was mentioned, and Mr. Spencer, referring to the circumstances above mentioned, remarked, "I tried vegetarianism once for three months, and found I was obliged to destroy everything I wrote during that period because it lacked meat."

It is entirely possible that Mr. Spencer's nutrition may have been impaired by a badly managed change of diet. At the time his experiments were made, the world did not possess sufficient knowledge to make a strictly vegetarian regimen entirely safe and satisfactory. Without the use of milk, eggs and butter, the diet was almost certain to be lacking in elements then not recognized, but now known to be essential to good nutrition, namely, vitamins and complete proteins. Milk supplies both of these elements, and it is now known that one may adopt almost any vegetable bill of fare he chooses, provided, only, that the amount of nutritive material shall be adequate, and that each days' ration shall include sixteen to twenty ounces of good cows' milk.

Mr. Spencer's diet was evidently lacking in something, but it was not meat; it was vitamins and complete proteins. Meat is lacking in vitamins, and hence it is more than probable that Mr. Spencer continued to suffer more or less from malnutrition all his life. His symptoms were just such as arise from the toxic state resulting from constipation. If he were living at the present time, he would doubtless find prompt relief by a course of treatment for changing his intestinal flora and eliminating the disturbing toxins from his body.

# Y. M. C. A. Tobacco Activity

The excellent Y. M. C. A. organization, which has been the agent of worldwide and most beneficent and uplifting activities, has fallen somewhat below its former standards in some of its war-time activities. Especially in its promotion of the sale of cigarettes and cigars, has the Y. M. C. A. organization played into the hands of the enemies of human welfare and race betterment. In acting as distributors for the great tobacco companies in their insidious campaign for promoting their poison-laden wares, they have aided in the debauchinng of American manhood to a degree that will require their most earnest endeavor for a whole generation to counteract. It remains to be seen whether this great organization will rally itself and endeavor to regain the lost ground, or whether it has received such a paralyzing blow by its departure from its old ideals and sanctions, that it will be unable to recover its former status as a world-uplifting agency.

A recent financial report published by the officials of the organization showed a purchase in one year of more than $5,000,000.00 worth of tobacco. Certainly a very poor sort of an investment for a Christian welfare organization.

# Raw or Uncooked Foods

The fact that primitive man took his food in a raw or uncooked state is sufficient evidence that it is possible to subsist upon foods in the state in which they are provided by the hand of Nature.

In addition, it must be said that there is good ground for believing that there are certain qualities possessed by raw foods which render them an important and even indispensable part of the normal diet, even though one should not go so far as to exclude cooked foods altogether from his diet.

Before discussing the advantages and disadvantages of raw or uncooked food, let us note the differences between the two.

The essential elements of a complete bill of fare are protein, carbohydrates, fats, salts, vitamins, and cellulose, or roughage. These six food principles, or elements, are all essential to nutrition. The least essential of them all is fat, the minimum necessary intake of which has not as yet been determined.

Protein we must have in sufficient amount to furnish the material for growth and repair, since it furnishes the raw material for the living machinery of the body.

Carbohydrates; that is, starch, sugar and dextrin, furnish to the body fuel to maintain animal heat and energy for work.

Fats, which are derived from carbohydrates, serve the same purpose and furnish the only means by which surplus or reserve fuel may be stored for future use.

Salts, lime, iron and other food minerals are necessary not only for the bones but for the blood, nerves, and other tissues.

Vitamins are essential as activators and regulators of the essential functions of the body. Certain vitamins enter into the composition of the nerve structures. In their absence, degeneration takes place.

Cellulose is necessary for bulk, which is required to stimulate peristaltic action, and thus rid the body of undigestible food residues and other wastes.

Let us now note how cooked and uncooked foods differ in relation to these several food principles:

1. *Proteins.* With the exception of egg white, raw proteins are much more digestible than cooked proteins. The process of cooking coagulates most proteins, thereby lessening their digestibility.

2. *Fats.* The digestibility of fats is certainly not improved by cooking, and in some cases is somewhat diminished by lessening the completeness of the emulsification, a state of fine division which greatly aids digestion.

3. *Starches.* Sugars and dextrins are not at all changed by cooking, but starch is hydrated and changed to the simplest form of dextrin amylo-dextrin. It is this change which renders cooked starch pasty, when raw starch is not. In the process of cooking, the cellulose envelope of the starch granule is ruptured, the granule swells enormously and is converted into dextrin. This is the change which takes place in the popping of corn.

It thus appears that in the case of starch, digestibility is increased to a marked degree by cooking. Cooking, in fact, accomplishes for starch in part what is accomplished by the process of ripening. Green fruits of all sorts contain a large amount of starch. In the process of ripening, the starch is wholly or in large part converted into sugar and dextrin. Cooking, however, carries the process only through its first step.

A native Mexican speaks of ripened fruit as *cocidoenelsol* (cooked in the sun). Cooking is simply an incomplete process of ripening.

It would thus appear that if cooking did nothing further than to dextrinize starch, no objection could be brought against the culinary art.

4. *Organic Salts.* When vegetables are cooked in water and then removed from the water in serving, there is left behind in the cooking water a large part of the essential salts, which constitute one of the most important food principles supplied by most vegetables. It is true this objection does not apply to baking, stewing or other cooking processes than boiling.

5. *Vitamins.* Cooking, even at boiling temperatures, destroys the antiscorbutic or scurvy-preventing vitamins. Ordinary cooking also impairs other important vitamins, and high cooking, such as is employed in the canning of meats and vegetables, practically destroys all vitamins. On this account, persons who live exclusively on cooked foods are certain to suffer from scurvy and sooner or later from other grave disorders of nutrition, due to lack of the essential vitamins. Thousands of bottle-fed babies die annually because of the destruction of vitamins through the sterilization or pasteurization of milk.

6. *Cellulose.* This vegetable product, which is highly essential for roughage, is softened and to some extent dissolve cooking. Hemicellulose (a familiar form of which is known as agar) is dissolved by heat. It is on this account that cooking softens certain foodstuffs and renders them easier of mastication. This is a great advantage in the case of many important food staples, such as wheat, corn, rice, beets and other raw vegetables.

We are now prepared to sum up the essential advantages and disadvantages of cooked and uncooked foodstuffs.

Cooked foodstuffs are more easily chewed. The starch is more digestible, and it may be further added that certain cooked foods are more palatable than the same foods in the raw state. These are practically all the advantages than can be offered in behalf of cookery. These advantages, however, are by no means unimportant, for they render possible the use of the grains and vegetables which constitute the world's staple foods. Without the food cereals, the world's population would probably have reached but a very small fraction of the present great total.

Let us now consider the disadvantages of cooked food:

1. Proteins and fat are rendered less digestible.

2. Vitamins are damaged or destroyed.

3. The salts are, in certain forms of cookery, in large part lost.

4. The cellulose is softened and rendered less efficient as a roughage, and dental decay of the teeth is promoted through disuse.

5. It might be added that cooked food is by its artificial preparation and seasoning rendered abnormally tempting to the taste, so that cooking promotes overeating.

Another question of importance which must be considered is the protein content of the food. Flesh protein has a special composition of its own, consisting of about twenty different components known as amino acids. A protein which contains all of these elements is, from the standpoint of human nutrition, known as a complete protein; that is, it is capable of furnishing to the body all of the elements, so-called "building stones," necessary for constructing the proteins of the body, nerves, muscles, glands and other living tissues.

Complete proteins are, of course, found in all animal flesh, but fortunately they are not confined to these structures, being also found in milk and eggs, which may be regarded as the only true nutrients of animal origin, since they are prepared by

Nature for the sustenance of young animals; whereas animal flesh is designed for the performance of animal functions, nerve and muscular action rather than to serve as food.

Among vegetable substances, there are comparatively few which supply in adequate amount the complete proteins required for human sustenance. The protein of corn, for example, supplies not more than ten per cent of complete protein. The protein of wheat is somewhat better; that of rice and potatoes better still. The soy bean is rich in complete protein, as is also the peanut, while the protein of the almond and many other nuts is also found to be of still higher quality.

Again: vitamins are not equally distributed among foodstuffs. Fresh milk and the yolks of eggs are richly supplied with all the vitamins required to promote growth and nutrition. The same is true of green leaves and the green parts of plants. Seeds contain certain vitamins, but are deficient in others, and the same is true of roots and fruits, including nuts.

From the foregoing, it is evident that a person who desires to live upon a raw diet, in arranging his bill of fare cannot base his selection upon the supposition that all raw foods are complete nutrients, but must possess a sufficient knowledge of the newer facts pertaining to nutrition to enable him to make such combinations of foodstuffs as will constitute an aggregate complete in all the elements required for perfect nutrition and in adequate quantities; in other words, a diet which supplies, in addition to a sufficient amount of fats, carbohydrates, salts and cellulose, a proper proportion of complete proteins and an abundant supply of the various vitamins essential to good nutrition. It is thus apparent that a diet consisting exclusively of fruits and nuts would not meet these requirements. Such a diet would meet all nutritive needs as regards proteins, fats and carbohydrates, but might be notably deficient in roughage, vitamins and salts. Certain nuts, if taken in sufficient quantity, would furnish the needed quantum of iron and lime, but there would still be a deficiency of cellulose and vitamins.

For a complete dietary, it would be necessary to add to fruits and nuts a liberal supply of green leaves in the form of greens, lettuce or similar foodstuffs. On such a diet, well prepared, life might be well sustained for an indefinite length of time. It would of course be easy on such a bill of fare to take an excess of fat and protein, as nuts are rich in these elements.

The following items would provide a day's ration, furnishing 2,500 calories, sufficient for the average person doing a fair amount of muscular work; if necessary to increase the ration to provide energy sufficient for severe muscular work, the number of calories might be easily increased to 3,500 by the addition of dates, figs, raisins or some other fruit rich in carbohydrates:

| | |
|---|---|
| Almonds | 7 oz. |
| Pecans | 3 oz. |
| Apples (2) | 10 oz. |
| Oranges (2) | 10 oz. |
| Dates | 2 oz. |
| Raisins | 1 oz. |
| Figs | 2 oz. |
| Lettuce | 2 oz. |
| Celery | 4 oz. |

That life may be sustained on a diet wholly composed of vegetable foodstuffs has been clearly established by the observations of McCollum and others in the feeding experiments upon rats, and there can be no doubt that by a sufficiently careful selection of foodstuffs, a purely vegetable diet can be made adequate to support all the requirements of growth and development and sustain nutrition, but it is doubtful whether the results would be sufficient to justify the effort.

By means of cookery, grains and vegetables can be made to furnish adequate quantities of the basic elements required to satisfy our nutritive needs, and by supplementing these foodstuffs with greens and dairy products and an adequate supply if fresh foods in the form of fruit, celery, lettuce and other salad plants it is possible to meet the nutritive needs at a minimum of expense and inconvenience.

It should be remembered, also, that by the addition of a pint of milk, with a moderate amount of dairy butter, to an ordinary bill of fare made up of fruits, grains and vegetables, the requirements of the body may be fully met, milk being so rich in complete proteins, vitamins and salts, with the exception of iron, that it is able to make good the deficiencies of other foodstuffs.

Of course, fresh fruit should be eaten daily in liberal quantity. In addition, a considerable amount of raw greenstuff should be taken as a part of every day's bill of fare. This insures an adequate quantity of vitamins, especially iron salts, which are most abundant in the green parts of plants.

# Prison Room to Let

In many parts of the country the demand for dwelling houses is greater than the supply. In some sections tenements and rented houses are found much overcrowded, but the report comes from all parts of the country that the jails and prisons are losing their population. Mr. Bates, the Prison Commissioner of Massachusetts, reports a reduction of more than sixty per cent in the prison population of that State, a situation for which prohibition is believed to be largely responsible.

As the country remains dry, no doubt the jail and prison population will still further diminish, and in many places it will no doubt be found possible to close up these criminal boarding houses for want of patronage. We are just beginning to enjoy the fruits of prohibition the accruing benefits of which will be appreciated a hundred years hence far more than is possible at the present time.

J. H. Kellogg

# High Heels a Menace to Health

High heels are still in fashion and threatening to become higher. Every few years a rumor gets abroad that the fashion mongers have had a streak of sanity, and are about to promote a reform in women's footgear. A few sensible shoes appear upon the street, but shortly the stilts are raised again to the top notch and the poor victims of the vagaries of fashion are compelled to go hobbling about as before.

Many years ago when in Paris the writer thought to improve the opportunity to secure a pair of real French shoes to bring home as evidence of Parisian folly. On entering a large shoe store in the shopping district he found no high-heeled shoes on sale, and he was told there were none to be had ready-made. Feeling sure that he has been misinformed, he engaged a friend to spend an entire day looking for high-heeled shoes at the different shops. The search was fruitless. Not a pair could be found anywhere. The information was obtained that the only way a pair of high-heeled shoes of the sort known as French-heeled shoes in this country, could be obtained in Paris was to have them made to order by a shoemaker. The writer, on calling upon a shoemaker for an explanation of the situation, was told that high-heeled shoes were not worn by respectable people in Paris, but only by actresses and members of the demimonde.

The price of a pair of high-heeled shoes made to order was nine dollars. Excellent ready-made shoes were offered at that time for $2.50 to $3.00.

Observing physicians have become of the opinion within recent years that the high-heeled shoe is a real menace to the health of American women. Dr. Scheimberg, a New York lecturer on mechanical orthopedics, says:

"It is to be regretted that among other fallacious conceptions existing in the minds of the layman, and too often medical practioners, an opinion is still prevalent that must in time become obsolete—the idea that the resultants of foot strains or foot ills are confined to the foot itself instead, as is often actually the case, of affecting organs and producing symptoms in other parts of the body. Referred pains are axiomatic to all of us as a pathological entity; but I desire to call special attention to the apparent disregard of the rôle of the high-heeled shoe in producing referred pains and also referred disorders.

"We observe, in this connection, the curious spectacle of many persons with crippled feet seeking diagnosis and treatment of their foot ills in the shoe shop. The treatment often takes the form of a shoe that has generally been manufactured or which is fitted without due appreciation of the mechanism and function of the feet. We observe also additional "treatment" consisting of the sale of commercial arch supports. We see the public depending upon corn cures for relief from excrescences that generally indicate malposition of the delicate structures of the feet and which call for minor orthopedic measures in preference to the much-lauded proprietary remedy that is heralded as a cure-all for foot troubles.

"The lack of realization of the importance of foot pathology by the profession has, therefore, created a number of pseudoscientists. It has even reached the point where the assertion has been made by some shoe manufacturers, and, I regret to state, occasionally by physicans, that the high heel is a boon. Such a statement falls to the ground in the light of a scientific analysis of foot physiology and pathology.

"The effects of high heels are so far-reaching that if legislation were enacted and rigidly enforced to prevent the further manufacture and sale of such shoes, the community would eliminate one of the most potent factors in undermining the vital health of present and future generations. An understanding of the connection between high heels and body health warrants first an explanation, from a mechanical viewpoint, of two significant problems, to which brief references will be made, namely: 1. Posture and its relation to organic function; 2. Essentials of normal foot functioning.

Regarding posture and organic function, it should be remembered that organic function is effected most efficiently if an organ or any of its parts is not displaced from the location assigned to it in the body, except where slight shifts are essential for physiological action. For example, the least deviation of the eyeball from a normal axis by pushing the finger against it distorts the vision. Another example of this is seen where one's occupation calls for an attitude that necessitates constant stooping, as in the operation of a machine. Here the constant stooping continually disturbs the location and relation of many organs, as the lungs or the intestines. This malposition and pressure produce pathological results.

As to the essentials of normal foot functioning, in order to produce a perfect equilibrium by a normal posture there must be an equalized and opposed action of the etensor muscles of the leg as playing against the flexor muscles. This opposing action corrects the relation of the longitudinal axis of the body so as to preserve an angle of about 90 degrees. Such a play of opposing muscles serves also to correct a tendency to fall backward or forward and produces a slight but normal back-and-forth swaying. This forward-and-backward swaying takes place by a ginglymoid rotation of the tibia and fibula over the astragalus, which receives the body weight from the tibia. The amount of work and rest for this system of flexible muscular cables playing on both sides of the tibia and also the whole skeleton is normal, and standing made easy if high heels do not produce a permanent shifting in the relationship of the bones and muscles of the legs and feet. The normal relationship in the position of bones and muscles of the feet becomes more essential in walking because the hinge-like action at the astragalus is increased from a slight swaying to a pendulous oscillation of the tibia over the astragalus; and true physiological walking can only be accomplished if the foot motion is free on the leg. Such motions in walking, if unrestricted, should enable a flexion or bending of the foot on the leg to about 75 degrees and an extension of about 135 degrees. The free flexion or bending up of the foot to the leg is essential at that stage of the walk when the leg is completing the arc over the astragalus by way of the hinge joint as already mentioned.

"A review of the two foregoing considerations furnishes two conclusions, namely: 1. That every organ or part of an organ can functionate normally only if it is not displaced from its natural position by factors not inherent in true physiological function. 2. That ease of equilibrium and gait depend on a normal relation in the length and position of the muscles of the legs and feet, particularly those that cause a flexion in walking of 75 degrees with the leg, and permit an extension of about 135 degrees.

"Perfect balance in standing and walking can only occur with the bare foot when all the delicate intrinsic motions of the feet are not hampered. When, however, we apply these conclusions to the changes that take place in feet wearing high-heeled shoes with a view to studying the effects of such shoes, we perceive a source of danger in these shoes, because the essentials of perfect equilibrium and gait have been violated. As to the first consideration, that organic function demands normal organic position. In Fig. 1 we observe perfect equilibrium, the perfect standing posture. The feet are at right angles with the body. The muscular tension of the entire body, to maintain the skeletal conponents, is equally distributed and is functionating unrestrictedly to correct constant swaying. The dotted line through the middle of the figure indicates a normal distribution and location of the heart, lungs, stomach, intestines, kidneys, uterus and other important internal structures. No organ is unduly malposed or hindered by pressure of neighboring organs. In Fig. 2, high heels have been placed under the os calcis, and the prop, theoretically of course, has altered the angular relation between the feet and the longitudinal axis of the body with a resulting tendency to fall, unless something is done to check this tendency by a recovery of balance. It is a physical impossibility to attain and maintain this attitude, and before the person reaches this degree of inclination, a re-adjustment occurs to produce the so-called slouch attitude, as shown in Fig. 3. An examination of the dotted line through this figure furnishes interesting information. It indicates that in order to recover balance, the curvature of the lumbar region has been unduly increased and the abdomen naturally distended to an increased convexity; the knees have been flexed to compensate for the increased angulation over the normal 90° angle at the ankle joint. If a detailed analysis of the changes in the body were carefully accounted for, it would reveal a shift from normal alignment or some strain of practically every organ in the body. The abdominal viscera are now functioning in an unnatural physiological relationship. If pathological disturbances occur in any of these organs through other causes, such disturbances are enhanced. As many women become corpulent in later life, the corset is laced more tightly to hide the increased protrusion of the abdomen and also to compensate for the ever-increasing weakness of the muscles of the back, whose strength has correspondingly been disturbed. This tighter lacing adds another element of danger, and together with the high heels only trunk by immobilization. As a result, little benefit is derived by the abdominal viscera from walking, which has become an inelastic strut. The disorders occasioned or enhanced by skeletal distortion due to high heels become in their nature more chronic and insidious because the resultant symptoms are obscured in general diagnosis, and do not call for immediate relief.

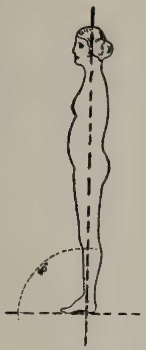

FIG. 1

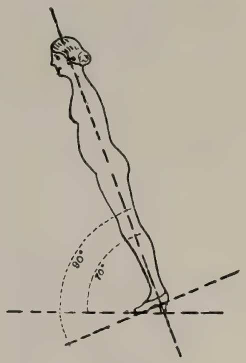

FIG. 2

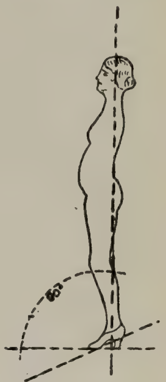

FIG. 3

"Perfect balancing and walking, as previously stated, demand a normal relationship in the length and position of the muscles of the legs to permit pliant foot function. We find that an application of this essential reveals the fallacy of the assertion that high heels are beneficial. Figs. 4 and 5 show that the posterior leg muscles are affected unfavorably by such heels. This type of shoe causes a contraction of the calf muscles determined by the respective height of the heel and with it a corresponding lengthening and weakening of the anterior muscles. A normal play of opposing muscles can no longer exist. In time, the slack created by the shortening of the posterior muscles is taken up by Nature with injurious results.

"Another danger in the high-heeled shoe from the strain imposed by a contraction of the posterior leg muscles is that it discourages the healthful and natural exercise of walking. It is needless to state that our female patients do not avail themselves of the benefits of outdoor walking, as there is no incentive when a disturbed muscular mechanism engenders fatigue and strain. When an attempt is made to walk, the resulting fatigue, with the referred nervous disturbances, do not encourage it.

"When the forefoot reaches the ground and prior to its receiving the full weight of the body, the first and fifth metatarsal heads touch the ground first; then as the weight of the body is ultimately received on the anterior metatarsal region, all of the heads flatten out to the surface and remain in line until the foot leaves the ground, when the contour of the arch is restored. The delicate function of this springlike arrangement, together with the play of the interphalangeal joints and the toes, however, is lost in the high-heeled shoe. The high heel shifts the greater portion of the body weight to the anterior arch, causing that arch to maintain a constant state of depression and malposition of its parts. In addition to this, when we recall that these shoes are generally built with a narrow toe box, unlike the shape of the normal forefoot under weight bearing, we begin to fully understand the causes of corns, callosities and ingrowing toe nails, the too frequent Morton's toe, and general metatarsalgia. All of these pathological conditions, though minor from a surgical viewpoint, materially assist in increasing the nervous tension of the mass and decreasing its efficiency. The incidental instability and displacement of the ankle structures, together with the small bearing surface of either the French or the Cuban heel, predisposes to chronic weak ankles, with the constant possibility of fracture of the malleolei. It also creates flat foot, as we shall presently see. When such shoes are worn by mothers through many generations, and particularly at the period of pregnancy, we are undoubtedly bequeathing a legacy of foot weakness to future generations.

"Offhand, the occasional contention that high heels render the longitudinal arch more secure and prevent flat foot seems logical. What could be simpler at first thought than that by wedging the heel upward we more compactly bind the component parts of the longitudinal arch, thereby reducing the possibility of a breakdown? Unfortunately, this contention is nurtured and survives because of a popular notion alluded to in my article on flat foot that the longitudinal arch in flat foot breaks directly downward. Instead of this, the actual flat foot consists of a lateral displacement of its two component limbs. The longitudinal axis of the os calcis in the normal foot is inclined obliquely inward, and the normal foot is actually resting on an arch the component limbs of which are already tilting inward at their junction. Additional stress on such a structure, occasioned by improper footgear, faulty attitudes of gait and locomotion, occupation and other factors, which cause abduction of the forefoot, can only result in a further tilting of the os calcis and as a sequence further abduction of the forefoot. The astragalus then rotates downward and inward, because its rigid location between the tibia and fibular prevent it from tilting obliquely with the os calcis. In this way, the greatest strain is brought to bear on the inferior calcaneoscaphoid ligament on which the head of the astragalus rests. The liga-

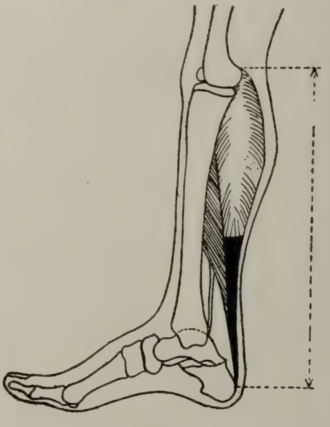

Fig. 4

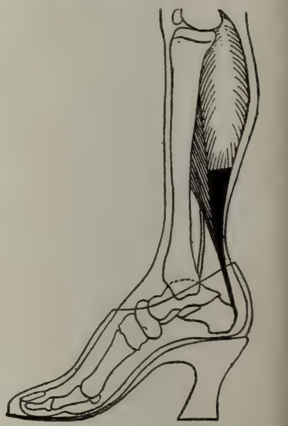

Fig. 5

ments sag, due to the pressure exerted by the misaligned astragalar head. This mechanical displacement of the component parts of the longitudinal arch may continue in varying degrees. The mechanical factor, however, is caused by the parts having been displaced first laterally and next downward, creating an angulation inward of the longitudinal axis of the foot at the astragaloscaphoid articulation. The contention that high heels prevent flat foot might warrant consideration if in flat foot the arch really broke down with the astragalus keeping in a straight line with the longitudinal axis of the foot, as sketched in so many of the circulars advertising commercial arch supports. This contention might merit some attention if the high-heeled shoes were constantly worn. But the shoes are usually discarded daily for low-heeled slippers, thus causing a too sudden lowering of the height of the heel, and as a result a condition is created that produces a strain or break at the astragaloscaphoid junction that is akin to the mechanical causes of flat foot and which, therefore, makes a shift from high to low heels a cause of flat foot.

"It seems strange that when we remove the high-heeled shoes from feet where the posterior leg muscles have become permanently shortened, Nature should reward this kindness by an injury. It is clear, when we stop to consider, why this condition results. To understand this, let us glance at Fig. 6: *A* indicates the location of ankle joint formed by the tibia, the fibular and astragalus, at which point flexion and extension of the foot on the leg takes place. The normal flexion of seventy-five degrees, which is required in walking, is only possible provided the posterior muscles of the leg have not become permanently shortened. When high-heeled shoes have been worn for some time the extended position of the feet has, however, rendered this contraction permanent, or perhaps the term fixed might be preferable. When the shoe is removed, accommodation to recover the required normal balance of the body on the feet by the restoration of an angle of ninety degrees can be effected in several ways, but not by normal flexion with the entire leg held straight. One way is to keep walking on the toes as if the heel prop were there. This is inconvenient and soon becomes impossible. The other way to accommodate the posterior shortening is to flex the knees so as to lessen the distance between the insertions of the gastrocnemius into the femur and the posterior os calcis, and thereby lowering the heel to secure the necessary body balance is made possible. But this attitude distorts the position of the entire skeleton and cannot be easily maintained for any length of time.

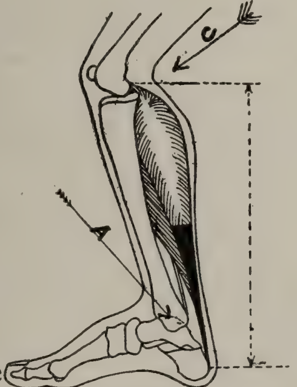

Fig. 6

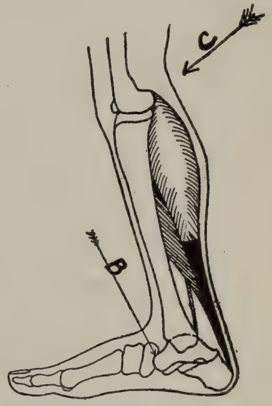

Fig. 7

"The other and most natural method of accommodation is by the attempt to forcibly straighten the knee joint to relieve tension. As the attempt to stand erect without bending the knee is made, the already shortened tendon Achilles refuses to lengthen an equal amount to the height of the discarded heel. The result is that the shortened tendon Achilles, the os calcis and the astragalus act in unison and in mass, and by their unified tug permit the lowering of the heel by an accommodative secondary flexion at the mediotarsal points indicated by B in Fig. 7. The mediotarsal joints, often referred to as a single joint because they act in unison, are formed at the inner side by the astragaloscaphoid junction, and on the outer side of the calcaneocuboid articulation. These joints which provide principally for the motions of abduction and adduction of the forefoot represent the next breaking point in the foot that permits of the secondary flexion. The astragalus then, as in flat foot, rotates inward and downward, creating an inward angulation of the astragaloscaphoid articulation, producing a flat foot due to the contraction of the tendon Achilles, but which is accommodated and hidden when the high-heeled shoe is worn.

"The contention as to the beneficial effects of the high heel finds no support in logic or practice so far as normal feet are concerned. Nor can a counter claim be made, that if one has worn such shoes for a long time, a return to proper footgear cannot be made because of the resulting injuries, pain and the sensation of falling backward accompanying a sudden return to low heels. Through proper treatment of the affected structures, combined with a gradual lowering of the heel, a safe return to normal equilibrium is possible. I have found that ordinary measures such as vibration, massage manipulation and exercises of the proper kind are productive of excellent results without injury."

# Vacations

### J. G. HENRY, M. D.

[Reprinted from the June, 1920, Monthly Bulletin of the Department of Health, New Haven, Conn.]

During the next few months several thousand people will go to various resorts throughout the country to enjoy their vacations. The majority of these are going for the purpose of promoting good health and to escape the enervating heat of the city during the hot months. They will go to farms or camps in the country, mountain, lake and seashore resorts, and very few will consider seriously the dangers or advantages of the place chosen, from a health standpoint, the prevailing general impression being that any place outside is more healthful during the summer months than the city. It is unfortunate that this idea is fixed in the minds of so many people, for if they were better informed on the subject, they would realize that the average city, with its well-organized health department keeping a close watch on the disposal of waste, the examination of water, milk, meat and other foods, and their control of communicable diseases offers far greater safety than the average summer resorts, and they would be more careful in the selection of a place to spend the vacation period. It is quite natural for us to wish to escape the heat of the city, and there are many resorts where great care is taken to insure the health of all who visit them; and we suggest that all who expect to go away for any portion of the summer satisfy themselves that the place of their choice offers more than sunshine and an abundance of fresh air. Otherwise you may find your nights made unbearable by mosquitoes, with the possibility of malarial infection, and your sunny days made disagreeable by poison ivy or the sting of insects.

One of the grave dangers of the vacationist is contracting typhoid fever: flies, milk and water are the most common factors in the spread. Every year people return to the city after a satisfactory vacation and within a week or two develop symptoms of typhoid fever and are at a loss to know how they contracted it. Inquiry will usually bring out the fact that they have visited a number of places near their vacation place and that they knew nothing of the milk and water except that it appeared good wherever they obtained it.

A farm or camp may have the most delightful appearance possible from a distance, but on close inspection prove to be a very dangerous place to live in. Last summer a number of cases of typhoid fever developed in a camp in this State, and when investigated it appeared that a visitor who had contracted the disease in another city was taken ill while at this resort, which had no immediate health supervision and through carelessness and ignorance in handling discharges from privies and the milk supplied to the camp. The milk was infected and a number of cases of typhoid fever resulted. This has been a popular place for many summers without any such trouble, and this is what may happen in many other places where there is no proper inspection of the sources of danger.

The danger from typhoid fever may be easily removed by taking the typhoid vaccine before going away. If you are planning to go away, have your physician inoculate you at once; the inconvenience is slight and it insures safety. You may feel that you would recognize danger when a case of typhoid appeared and would immediately leave the community, but the infection may occur before you learn of the case, as it did happen in the camp previously mentioned, and too, there are many typhoid carriers abroad who are as dangerous as the cases, and you cannot recognize these without assistance from the laboratory.

If you find yourself in a district where malaria is present, a physician will order some preparation of quinine for you which will keep you from suffering from the disease by taking a few grains weekly.

Tetanus or lockjaw is another danger occurring less often, but very serious when it does occur, and about which little is known by the public generally. Many vacationists suffer from puncture wounds from fish hooks, tacks, or nails and other sharp instruments, and although the number of these who develop lockjaw is comparatively small, we cannot pass without calling attention to it and the means of preventing it. As soon as a wound is sustained, visit a physician and have him give you an immunizing dose of anti-tetanic serum and the danger of tetanus will be past. If you wait until the disease develops, your chances of recovery are very doubtful.

The well known and long honored remedy for snake bites has been ordered off the market by Congress. So a few may be interested in some other means of dealing with a snake bite. Fasten a bandage about the arm or leg several inches above the site of the wound, tight enough to interfere with the circulation; then with the blade of a pocket knife, if no better instrument is at hand, cut through the skin in two directions, making a cross at the point where the fangs entered; each incision should be usually an inch long. Then apply the lips and suck the blood with as much force as possible for several minutes; cauterize the wound or apply some antiseptic dressing and bandage until the physician arrives.

Vacationists should be careful of the places chosen for bathing. A polluted stream is neither safe nor is it a pleasant place to bathe. Not infrequently typhoid fever is spread in this way.

Mothers who are taking their children to places where a physician cannot be reached immediately should have a Schick test done, to learn if the children are susceptible to diphtheria, and if they are, have toxin-antitoxin given to insure their safety. The immunity thus conferred will last well beyond the vacation period and may be permanent.

These matters may seem trivial, but if you ever find yourself away from home with some member of your family very sick and unable to obtain the services of a physician, you will then realize something of the value of these simple suggestions.

# For Your Health—Make a Garden

R. V. ASHLEY

(Fifth Article)

"The quiet August noon has come;
  A slumberous silence fills the sky;
The fields are still, the woods are dumb,
  In glassy sleep the waters lie;
And mark yon soft, white clouds that rest
  Above our vale, a moveless throng;
. . . . . . . . . . . . . . . .
  For now a joy too deep for sound,
A peace no other season knows,
  Hushes the Heaven and wraps the ground—
The blessing of supreme repose."

And what is more appropriate to the temper of this month than repose—and dreaming—and fleeting air castles, ephemeral, evanescent, the product of fancy's wanderings! But, on your guard! The season is not yet ended. Most gardeners apparently consider August the least active of the year for gardening work, and rest secure in the belief that a full harvest is assured by the activities of the previous months. But experience teaches that the efficient gardener knows no let-up in gardening operations until the heavy frosts of autumn announce the decree of mother Nature that outdoor working of the soil must cease.

And now as never before the gardener should awake to the necessities and opportunities of the situation. As the demand for luxuries has increased, the production of necessities has decreased. As a result, we face a tense economic situation which has been rendered acute by political jugglery, gross profiteering and monopolistic control of food imports. Unless the producer is given more encouragement, it will not be long until someone will go hungry.

The American food producer—the farmer—today occupies the position of a star solo performer, artistically and energetically wielding a hoe in an arena surrounded by grandstands and bleachers packed with fans who applaud enthusiastically but never think of working the implements themselves.

All signs point to lower and still lower agricultural production. We face the immediate prospect of higher food costs than we have ever known. We are told that the State of Iowa is 1,500 workers short of her agricultural needs, that in New York State 25,000 farms are idle this year because there are none to work them, and that Alabama farmers are leaving one million acres untilled for the same reason. If these conditions were confined to the instances mentioned, there might be little cause for alarm; but in view of a nation-wide condition of which they are only examples, it behooves all who can, even now, to bestir themselves to get back to the soil, whether it be a thousand-acre ranch or only a plot of parsley on the window-sill, and produce as much as possible of their own food supplies. And remember always that "gardening is an employment for which no man is too high or too low."

Just to the extent that you raise your own foodstuffs you eliminate the three principal factors in the high cost of living, which are the cost of transportation, of marketing and of distribution. The products of your own garden present no transportation, marketing or distributing problems; for they are already at your door. Your own family furnishes the market, and the problem of distribution was already solved when you planted the seeds.

And while you are engaged in gardening operations, be careful to maintain correct postures, and remember that free perspiration means increased activity of the skin in the excretion of poisonous body wastes, and greater activity of the skin means a lessening of the work required of the kidneys, liver and other excretory organs, which all too often are overworked. Remember, too, that the increased muscular activity means not only pure blood, but its better circulation and a greater capacity for supplying every tissue of the body with the life-giving oxygen and assimilated food materials so essential for the continual renewing of the body necessary to maintain it in fit condition.

## Vegetables For August Planting

Possibly it may surprise you to know that there is not a day in August but some seeds may be profitably planted. Most of the following, however, should be in the ground by the 15th of the month.

Beets, early varieties for use both as autumn greens and for winter storage.

Carrots, early Parisian and Early Scarlet Horn.

Collards, cress, Chinese cabbage, corn salad, endive, kale, mustard, chicory, spinach and other plants for "greens." Collards will grow in hot weather, when spinach will not. Corn salad should be sown between the middle and the end of the month.

The Chinese cabbage ("Santosai") should be sown now for use both as a salad and for a delicious vegetable for winter storage and use. This plant does not grow like ordinary cabbage, but rather as Cos or Romaine lettuce. As a change from lettuce the partially grown leaves make a delightful dish. Santosai combines in one plant a delicious lettuce, cold slaw, and cabbage. It is a novelty which to taste is to like. The seeds may be sown in the open ground or in a cold frame. In either case the plants should be transplanted to twelve inches apart in rows eighteen inches apart. The leaves are light green outside but almost pure white inside, and have a remarkably broad white midrib which is especially fine for use in cold slaw. In November the heads are stored like other cabbages.

August 15 is the proper time for sowing corn salad, as this plant is especially valuable for winter use. By covering the plants with a heavy layer of straw late in the fall the "greens" may be had for use all through the winter.

It is well known that ordinary spinach will not do well in hot weather. There are several varieties of winter spinach, however, which can be planted in hot weather for fall and winter use. One of the best of these is Viroflay, which is said to be the best all-round spinach for early spring and late fall and winter. Cover with straw when the frost comes, and you may have spinach all winter long, snow or no snow.

Lettuce. Mammoth Black Seeded Butter, Little Gem, Cos or Romaine, and Matchless. The last named is claimed to be one of the most valuable vegetable novelties ever introduced. It is a cross between the head variety, possibly the Iceberg, and the Cos or Romaine lettuce. It bears numerous leaves which form a long loose head. Its chief merits are its tenderness and brittleness. It is so crisp and brittle that it will break almost like thin glass. On this account it is not a good variety for shipping, but is so much the better for home use. It has a unique flavor, a combination of head and Cos and is said to be far superior to any other sort. It is unequalled as a summer variety, but is fine at all seasons. It matures into a solid, long, slender head.

Kohl rabi sown now will be ready early in October. It grows especially well during the cool weather of fall, and can be carried through the winter if stored in sand or soil, as beets and carrots are stored.

Peas may be sown up to August 15. Blue Bantam and Little Marvel are excellent sorts for late sowing.

Radishes. White Icicle and French Breakfast for summer sorts. Of winter sorts sow China Rose, Black Spanish, Chartier, and Long Nerima.

Turnip. Shogoin and Yellow Stone. Both may be sown as late as August 15 and are excellent for winter use. Shogoin is a Japanese turnip that grows to enormous proportions, a single specimen often weighing 15 pounds. It is so sweet it can be eaten raw, which is a decided advantage, and when stored away will furnish food during the entire winter.

Sweet corn. This cannot be considered a certain crop for August planting, but it is well worth while to take a chance, using of course, early varieties such as Golden Bantam and similar sorts.

Salsify, if sown in August and left in the ground until spring, will be twice the usual size and better flavored.

Sow seeds of Welch onion and use the leaves next March for seasoning.

As another pleasing new acquaintance, sow tuberous rooted chervil this month. The seeds will lie dormant till spring. If kept over till spring in a dry state and then planted, few if any will sprout. The roots are used like carrots, but have a distinct and delicious flavor. They will be ready to use next August, but will be improved in flavor if left in the ground till late fall. They, too, may be stored for winter use.

Did you ever raise your own celery? If not, try it now. The essentials are a deep soil, absolutely thorough cultivation, and sufficient water to keep the ground moist and the plants growing. Purchase plants which have been twice transplanted so as to produce a good fibrous root system. Fulfill the above requirements, and you will be agreeably surprised as to the result.

If you failed to start a strawberry bed in the spring, do it now, setting out pot grown plants. Good cultivation will insure a bountiful crop of fruit next spring. The plants will cost more than others, but they are well worth it.

## The August Flower Garden

"The one who could repeat the summer's day
Were greater than itself,
Though he minutest of mankind might be."

The August flower garden presents coarser foliage and stronger color than that of any other season. As a consequence, it is less expressive of poetry and suggestion, and greater pains must be taken to keep it within the bounds of neatness and order. Whether or not the gardener is a real artist may be easily shown by his handling of August flower borders. The composites are by far the most numerous of the August flowers. This includes, of course, flowers of the daisy type. Too many of these make a garden monotonous and uninteresting, though a few of them are important. They should include the Globe and other ornamental thistles, Iron Weed, Liatris, Goldenrods, Achilleas and Artemisias.

The "cool" garden in August will present gray foliage as a dominant feature. There will be clumps of white phlox, rounded Rue bushes and masses of Lyme grass. Other items in the group will be silver thistles, Veronica, Virginica, and a mass of moon daisies reaching to an edging of pinks, lavendar and white ageratum. A group of Funkia subcordeta, the plantin or Corfu lily, emphasizes coolness and freshness in the grouping. Sea lavender, Speciosum lilies, and pale lilac phlox produce a very pleasing composition. Other plants which lend beauty and satisfaction to the August flower scheme will include some of the Aconites, Armeria Maritima, the flaming orange Asclepia Tuberosa, some of the astors and Astilbes, the rose pink Betonica, the Butterfly bush or Buddleya, Campenula Carpatica, spikes of Cimicifuga racemosa, Coreopsis lanceolata, Relphinium Hybrids, the Foxgloves Eryngium, Alpinum, Gaillardias, Gypsophila Paniculata, Hibiscus, Hollyhocks, several of the lilies and Lobelias. Most of the phlox, Potentillas, Rudbeckias, the Blue Salvias, Scabiosa, Blue and Pink Statices, Tritoma, Trollius, Gold Quelle, and Pink and White Valerians.

## Perennials From Seeds

Every real gardener has a longing for great masses and sheets of color formed by generous plantings of hardy perennials. If young plants are purchased, the expense of such plantings is prohibitive to the average garden amateur. But if raised from seeds fifty cents wisely expended will produce the same results as fifty dollars in the purchase of plants. And besides, raising your own plants from seeds is great fun, and the experience of doing it is something which cannot be bought.

August is the best of all the months for the sowing of seeds of perennial plants. By the first of August you can obtain perfectly fresh seeds, whereas if planted earlier most of the seeds are sure to be of last year's crop and their germinating quality so much the less. In case of the Delphiniuma, especially, the germinating power of last year's seeds is only fifty per cent or even less, whereas almost 100 per cent of the fresh seeds may be expected to make plants.

The very best way of handling the seeds is to sow them in a cold frame with a sash top, the glass of which has been covered with whitewash. The seeds should be sown in rows four inches apart in carefully prepared soil, thoroughly watered and then covered with the sash, which, however, should be raised about four inches from the frame to provide free circulation of air. After the seedlings are about two weeks old the sash may be removed and a lath screen used instead for another week. This will permit them to become gradually hardened to weather conditions.

When the first or second set of leaves appears, the young plants should be transplanted to about four inches apart each way, preferably into another cold frame. Protected by the cold frame, practically all the plants may be wintered successfully, whereas in the open the chances of loss are much greater.

If, however, a cold frame is not available, the seeds may be sown in the open ground. The seed bed should be carefully prepared, well drained, and should be raised two or three inches above the surrounding surface. The bed should be shaded and kept moist until the seedlings are well above the ground. The cloth screen used should be supported on stakes eight inches to a foot above ground and should extend sufficiently beyond the edges of the bed to protect the ends of the rows. Indeed, fair success may be had by spreading burlap over the bed in immediate contact with the soil and keeping it thoroughly moist until the young plants appear. Then, of course, it must be removed and the plants kept carefully watered.

From seeds sown the first of August, young plants will be ready for transplanting into permanent quarters by the end of September. If this is done, the plants should be covered with good leaves or straw at the approach of cold weather to protect them from the alternate freezing and thawing that is so fatal to shallow-rooted plants. The mulching, however, should not be so heavy as to smother the plants or cause them to start into growth too early in the spring.

A few of the so-called hardy plants, such as the finest strains of English daisy, Polyanthas, and the Gloxinia-flowered Foxglove, practically require wintering in a cold frame to insure satisfactory results.

Certain short-lived perennials give better results if treated as biennials. The Golden and Rocky Mountain Columbines, the Chimney Bellflower, perennial Larspur, the perennial Gailardias, the Iceland Poppy, and the Snapdragon would be placed in such a list. These plants give the best flowers from August-sown seeds and winter well with a simple covering of litter.

Forget-me-nots, Violets, Sweet Williams, the common Columbine, and the yellow Alyssum self-sow freely when once established and so furnish an abundant supply of young plants ready to hand. The following is a fairly representative list of dependable perennials which every amateur may raise from seeds with excellent prospects of achieving fair success:

| *Common Name* | *Standard Name* |
|---|---|
| Single hollyhocks | Althaea rosea |
| Alkanet | Anchusa Italica, Dropmore variety |
| Japanese anemone | Anemone Japanica |
| Plume poppy | Bocconia cordata |
| Boltonia | Boltonia asteroides and B. latisquama |
| Carpathian bellflower | Campanula carpatica |
| Peach-leaved bellflower | Canpanula persicifolia |
| Pompom chrysanthemum | Chrysanthemum Indicum |
| Perennial coreopsis | Coreopsis lanceolata |
| Garden pink | Dianthus plumarius |
| Bleeding heart | Dicentra eximia |
| Blue day-lily | Funkia sieboldiana, fortunei, ovata and lancifolia |
| White day-lily | Funkia subcordata |
| Baby's breath | Gypsophila paniculata |
| Lemon lily | Hemerocallis flava |
| Orange day lily | Hemerocallis fulva |
| Sweet Rocket | Hesperis matronalis |
| Perennial candytuft | Iberis semperverens |
| Beebalm | Monarda didyma |
| Oriental poppy | Paver orientale |
| Moss pink | Phlox subulata |
| Valerian | Valeriana officinalis |

"It is easy enough to plan a perennial border or garden that will give you never-failing bloom throughout two-thirds of the year—a brilliant procession from the early columbine of April through the Irises, the peonies and the phlox to the anemones and the chrysanthemums of late November—the 'swan song' of the floral pageant."

## A Garden of Sweet Perfumes

Just how much of the charm of gardens is due to sweet odors perhaps no one knows. Every garden should contain enough of the sweetly odorous flowers to lend a subtle fragrance to the whole. Such a garden may be composed of shrubs, hardy perennials and annuals. The shrubs will include the lilacs, white and purple, the mock orange, or sweet syringa, and the Yucca filamentosa or Adam's Needle. These will provide perfume from early spring until late August. Flower perfumes, of course, are always stronger in cloudy weather and at nightfall. Fragrant vines will include the honeysuckle, jessamine, clemantis, mignonette vine and moonflower. These, of course, should be planted around porches and pergolas. The white day-lily should have a definite place in the scheme, but because its foliage is not prepossessing it should be placed far enough back so that it will not be conspicuous. The annual wall-flower is almost as sweet as its ancient English cousin, which has not proven hardy in our long winters. The old-fashioned cabbage rose emits generously its delightful rose perfume. Rose and mint geraniums and lemon verbenas should be included because of their fragrant foliage. The white evening primrose, Oenothera speciosa, is a native perennial and one of the most charming of all sweet-scented plants. Verbena Mayflower, with large clusters of pure white or pale pink flowers and white and pink petunias are particularly fragrant at night. The sweet herbs, laverder, thyme, and rosemary, should also be included, as should Southern Wood, Borage and Sweet Fern, as they make sweet-smelling savors for indoor use as well as in the garden. Fragrant flowers mark the climax in garden satisfaction.

# Self-Poisoning as the Cause of Disease

ALEXANDER BRYCE, M. D.
Birmingham, England.

*(Continued from July)*

## Scientific Views on Auto-Intoxication

With all this evidence at our disposal, any ordinary reflective layman would have no difficulty in concluding that the case for auto-toxemia had been abundantly proved, but it is with something like an air of hesitancy that the pure scientist—that is, the man who is depending on chemical or other research to substantiate his facts—rather grudgingly assents. Of course this is all to the credit of the scientist. In his official capacity, he is compelled to be the quintessence of caution, and he demands the most undeniable and irrefragable proof before he places his hall-mark upon any conclusion.

His attitude towards the theory of intestinal toxemia may be summarized somewhat as follows: Few of the products we have mentioned are really toxic, and in small quantities are not likely to be harmful, in view of the detoxicating and eliminating powers of the liver and kidneys, etc. Still, as there must be some explanation of the undoubtedly evil effects of intestinal stagnation, he admits there must be some malign process in operation. Not being able to lay the actual offender by the heels, he is compelled to seek the aid of theory. Hence he suggests that soluble toxic substances like tyrotoxicon may be formed and rapidly absorbed before detection, or that many unidentified substances are produced in the alimentary canal which are usually destroyed but under certain conditions may be re-absorbed.

He goes so far as to declare his belief in some such process, because extracts of the contents of the alimentary canal are very poisonous. Bouchard long ago proved that an extract prepared from faeces was capable of manifesting highly toxic effects, and was even able to differentiate between the toxicity of the faeces of a person living on a mixed diet and one living on a fleshless diet, the former being, he declared, twice as toxic as the latter. Herter also showed that an extract of the faeces of a carnivorous animal produced deadly effects when injected into the bodies of small animals, while similar extracts of the faeces of herbivorous animals did not.

In the mucous membrane of the upper part of the small intestine of dogs a very toxic substance has been found, which upon injection into the blood of rabbits killed them by respiratory paralysis. Yet when injected into the portal circulation it was detoxicated by the bile and rendered harmless. When the dog was fed upon a milk diet, this poisonous substance could not be found.

Extracts of the mucous membrane of the adult colon are very toxic, whilst those of the faetal intestine are not.

Then, again, by cutting off a part of the small bowel (duodenum) of a dog, a highly poisonous substance is found in its mucous membrane, possibly on its passage out of the blood. This causes severe splanchnic congestion, vomiting and diarrhoea when injected into normal dogs. It is not destroyed by autolysis, filtration, or heating at 60° F., yet by inoculation dogs can be rendered somewhat immune to it. Although it is recognized to be a toxic proteose, its origin has not been determined, but it is a most important factor in the toxaemia of intestinal obstruction. The liver appears to have very little detoxicating power over this substance, because dogs with an Eck fistula—which cuts the liver out of the circulation—behave much the same when the intestine is obstructed as any other dog.

This substance cannot be obtained by hydrolysis or autolysis of the normal mucous membrane of the duodenum, but only from that of an obstructed intestine. Obstruction of the lower part of the intestine has much less effect, and the poison found there is much more likely to be destroyed or neutralized.

## Effects of Auto Toxemia

He feels he must reckon with the fact that headache, malaise, lassitude, sciatica, tetany, epilepsy, eclampsia, many forms of skin diseases, various nervous disorders, myxoedema, and cretinisim chlorosis, and pernicious anaemia, cirrhosis, nephritis, arteriosclerosis, have all been attributed to poisons of gastro-intestinal origin. He admits there is good reason to believe that nonalcoholic cirrhosis can be thus accounted for, and even myocarditis. He says it is reasonable to suppose that pressor substances like tyramine and phenylethylamine may cause arterial and cardiac injury.

Tetany is caused by poisons in the stomach, possibly by carbonic acid being rapidly excreted by the mucous membrane, although a deficiency of calcium both in the blood and nervous system may cause this, and it may be due to deficiency in the parathyroid glands as well as a defective diet. But he knows that the parathyroid weakness may be due to exhaustion caused by the necessity for destroying an excess of toxins in the blood.

One can have nothing but the most sincere admiration for the meticulous caution displayed by the pure scientist in enunciating his conclusions, and we must agree with him that it is judicious not to assume anything unless facts are available wherewith to support the assumption. Nevertheless, on reviewing all the facts he has supplied, one can hardly escape the conclusion that he is really converted to the theory of intestinal toxaemia, but is awaiting the advent of some overwhelming fact of startling import, which in association with the others would establish the principle beyond all cavil.

## The Theory Proved

It appears to me that by adopting the method of compromise so common in economic and even legal practice it is quite possible to array the scientific evidence in such a fashion as, for all practical purposes, to establish the truth of the theory of auto-intoxication. In complete intestinal obstruction undoubted toxic absorption and poisoning take place. There is no question about this; it has been demonstrated over and over again by experiment and in medical practice. It is reasonable therefore to infer that as one nears the borderland of complete obstruction, though in a region still somewhat less than complete, a greater degree of toxic poisoning may be expected, although somewhat less severe than that experienced in the complete variety. The whole question turns on the degree of obstruction.

## Kellogg's Definition of Stasis

We are here at once compelled to reckon with Kellogg's experience, which goes to prove that obstruction, or shall we say stasis or stagnation, is present in every case in which there is only one evacuation each day. Whenever, indeed, the faeces are expelled in a solid or "formed" condition, even although there are two or more movements per day, stasis exists; and he enunciates the view that as the remnants of a meal reach the pelvic colon—that is some twenty-seven feet from the mouth—in about ten to twelve hours, it is reasonable to suppose that the remaining ten or twelve inches of alimentary canal to the anus should be traversed in less than two hours. The processes of digestion and absorption of digested products is completed before the splenic fleure is reached, the descending colon, iliac and pelvic colon and the rectum containing few absorbent vessels. The faeces being ready for discharge from the body, what possible benefit can result from their longer retention? Putrefactive processes are actively at work producing various toxins, which by absorption may become a source of enormous and irreparable mischief. Why should not this useless mass of waste matter be expelled as soon as it is ready for expulsion? He considers that mankind has so disregarded the calls of Nature that this lower portion of bowel no longer performs its normal function.

I entirely endorse the view taken by Dr. Kellogg; and whilst I think it is a counsel of perfection to advise that one should aim at evacuating the waste residue of a meal in fourteen hours after its ingestion, I am perfectly certain that it is infinitely safer to allow an interval of less than twenty hours rather than more. To be quite safe, this would mean an action of the bowels morning and evening; and anything short of this is running some risk of toxic absorption.

A very little experience of medical practice or even of every-day life will soon convince any one that this minimum is rarely attained, so that on Kellogg's hypothesis, almost every civilized man and woman is suffering from some degree of obstruction.

### Toxicolytic Power of the Liver

In the second place, the pure scientist advances the view that whatever toxic formation and absorption take place are likely to be neutralized by the detoxicating and eliminating functions of the liver, kidneys and other organs of protection already mentioned; but in so doing he places absolute reliance on the integrity of these organs, and makes no allowance for any departure from a perfectly normal condition. But when one realizes that it is the exception rather than the rule for any adult in this or any other civilized country to do without the more or less frequent assistance of some purgative agency, it can hardly be expected that the intestinal mucous membrane can escape from some degree of injury calculated to increase the chances of toxic absorption. It has already been pointed out that the occurrence of cutaneous rash after an enema and the feeling of exhaustion and depression experienced after the use of cathartic medicines can only be explained by this hypothesis.

If one is to place any dependence upon the patient's diagnosis of his own case, it is pretty clear that his dietetic incursions have been framed in an effort to ascertain the toxic co-efficient of his liver, while the mixing of drinks, even amongst the most innocent, is not calculated to maintain the integrity of the renal tissue for a long lifetime. The manifold disorders of the various ductless glands are a pretty fair evidence that their toxicolytic powers are being taxed to the utmost.

Altogether, it does not require a very great effort of the imagination to perceive that the presence of a certain degree of stagnation on the one hand and a diminution of the powers of detoxication and elimination on the other must increase very largely the chances of toxic absorption; besides which one may enlist the doctrine of the summation of stimuli to augment the evidence in favor of the argument. It is a very fair assumption that not one but many toxins are in constant process of formation and absorption, so that while one may not be sufficient to bring about auto-intoxication, the repeated absorption of many will finally produce the result.

## Medical Criticism

W. C. Alvarez (*J. Amer. Med. Association,* 1919, *72,* 8-13) declares that "auto-intoxication" is commonly diagnosed when a physical examination would show other more definite causes for the symptoms. He dismisses the kind of proofs we have offered as assumptions and declares that most of them have been proved to be wrong. He says that the usual symptoms of the constipated disappear so promptly after a bowel movement that they cannot be due to absorbed toxin, and emphatically states that they must be produced mechanically by distention and irritation of the colon. They occur in nervous, sensitive people. He assures us that various activities of the digestive tract can profoundly affect the sensorium and the vaso-motor nerves.

If he had said that various activities of the vaso-motor nerves profoundly affect the digestive tract, I should have had more faith in his statements. Can he have forgotten, or has he never come across cases of pernicious anaemia which have been clearly demonstrated to be due to such small amounts of toxins as could be absorbed into the system from pyorrhoea alveolaris? A vaccine prepared from the germs discovered in the infected gum or tooth has cured such cases of pernicious anaemia permanently. It is well known that ordinary anaemia is frequently due to constipation, but it is difficult to prove that pernicious anæmia is due to the same cause, although there is every probability that this is the case. I have certainly seen cases enormously improved by daily intestinal douches, and the fact that meat is not tolerated by them is extremely suggestive.

The certainty of the removal of the actual cause by a vaccine, as happens in pyorrhoea, is rarely possible in intestinal toxaemia, so that when a case is improved by intestinal douches and then lost sight of, the occurrence of a relapse is not surprising. Nor is a cure possible unless the actual cause can be permanently removed; and when the erythrocyte count is reduced below 1,000,000 per c. c., the patient is too far gone for effective change of the intestinal flora.

The suggestion that rapid disappearance of the symptoms of the constipated soon after a bowel movement disproves the toxic absorption theory is surely due to the forgetfulness of the great efficiency of the liver as a toxicolytic agent, and to the fact that all the blood in the body circulates through the liver once per minute. Think of a liver so highly charged with toxins as to have lost its detoxicating powers. At once headache and other symptoms begin to manifest themselves and persist until the removal of the source of poisoning by a purge, a douche, or other agent. In one minute all the blood of the body has passed through the liver, rapidly restoring its powers of detoxication, which remains potent so long as the supply of toxins does not exceed the toxic efficiency of the liver.

I hope I have now marshalled enough evidence to prove that in the process of digestion poisons are formed not only from the digestive ferments themselves, but also from the ravages of germs essential to complete digestion. We know that the products of digestion are absorbed with extreme rapidity, and that the majority of scientists now subscribe to this view, because some explanation of the undoubted existence of auto-toxaemia is necessary.

(*Continued in September*)

# The Fly Menace

Dr. Hemenway, a district health officer in the State of Illinois, gives the following information concerning infection through flies, with valuable suggestions how to combat this potent source of disease:

"Flies directly infect people by depositing germs upon mucous membranes of the skin. Biting flies may infect through the skin. The more common method is by depositing the germs in or on articles of food, especially milk. Very frequently it is the depositing of germs upon empty dishes which in turn infect the milk or other articles of food later placed in them.

## Where Flies are Dangerous

"In modern cities, supplied with suitable sewers and water closets, flies are relatively less important factors as disease propagators than they are in villages. In the cities they find less opportunity to become infected with the special germs; but even so, epidemics in cities may be caused by fly infection at some distant point. For example, an epidemic of typhoid fever occurred in the city of Washington, and it was found that the victims had milk from two dairies, both of which received their supply from one farm. Everything about the milk-house and the milk handlers was above suspicion. Then it was discovered that flies carried the infection to the milk-cans hung out to air, from an outhouse 200 feet away.

"In cities it is only the houses of the poor, as a rule, which depend upon privies. These houses are generally so poorly constructed that efficient screening is impossible. They are generally crowded with inmates, often so poorly nourished that they fall easy victims to disease.

"Proximity of fly-breeding places to privies and to houses insures the occurrence of diarrhea in the summer; and if a single case of typhoid or a typhoid carrier comes into the area early in the summer, an epidemic of typhoid may be definitely predicted.

"In a well-managed city, the fly peril is relatively small, because few flies are produced and therefore the chance of infection is slight; but that danger exists must not be forgotten.

## Fly Traps

"In spite of precautions, flies may be produced. A few may be killed by 'swatting.' More may be caught by traps. Fly traps, though numerous in design, are all based upon the habit of the fly to crawl upwards rather than downwards, and to seek the light. If the cover to the garbage pail be sufficiently loose, the flies are attracted to the can by smell. A trap over an opening in the cover to the can gives them a glimpse of light which they follow to destruction. Such traps are especially recommended for all receptacles for the waste from meat shops and fish markets.

## Fly Poisons

"The number of flies in a house may be somewhat reduced by the use of sticky fly paper, though it is disagreeable to have around; or a few may be killed by the commercial poison fly paper, but accidental poisoning of children may ocur from its use. Extermination of flies depends chiefly upon the success with which their breeding is prevented, and other measures are simply aids which are without much value by themselves. Intelligent warfare must therefore be guided by a knowledge of fly habits."

# The Almond

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The almond perhaps deserves to be placed at the head of the list of all edible nuts. It is one of the finest of all products of the vegetable kingdom. The almond was formerly produced almost exclusively in Oriental countries bordering on the Mediterranean, but in recent years its culture has been largely developed in California and to some extent in Florida. The so-called Jordan almond is the largest and one of the best flavored of all the numerous varieties. The name Jordan does not refer to the Jordan river, but is a corruption of an original word meaning garden, which was applied to this variety of the nut for the reason that it was first raised only in gardens. It is also claimed that the Jordan almond owes its name to the fact that this particular variety of the nut was first raised at Malaga by an Englishman bearing the name of Jordan. Among the Greeks the almond was at one time known as the Greek nut and later as the Thasian nut.

The almond is the fruit of a tree (*amygdalus communis*), which is believed to be a native of Morocco and Barbary, although it has, especially in recent times, become widely scattered through the warmer temperate countries of the world. It has been known from the most ancient times and is mentioned in the Bible (Genesis 30:37), although erroneously translated hazel. Aaron's rod was made of almond wood, and almond twigs bearing blossoms have for centuries been used, as at the present time, by the Hebrews in celebrating certain festival days.

### Composition

In composition, the almond is, like most other nuts, remarkable for the amount of protein which it contains, associated with a still larger proportion of a highly digestible oil and a much smaller proportion of sugar and dextrine. According to Church, the composition of the almond is 25 per cent protein, 54 per cent fat, with about 10 per cent of carbohydrates, from which it appears that a pound of almonds contains as much protein as a pound of beef, as much fat as two-thirds of a pound of butter, with two or three ounces of bread thrown in. This gives the nut a nutritive value of more than 3,000 calories to the pound, or about two and a half times that of bread. It is an old saying in Eastern countries "that no man need starve on a journey who can fill his pockets with almonds."

The almond is certainly one of the choicest of Nature's food products. It contains an assortment of the finest and most nourishing food materials, in the most compact and concentrated form. A pound of almonds contains more than three times as much nutriment as the same quantity of the best porterhouse steak. The steak furnishes one-fourth less protein (19.1 per cent as compared with 25 per cent) and less than one-third as much fat (16.1 as compared with 54 per cent), a total of 975 calories to the pound compared to 3,030 to the pound of almonds; and the almond is notably superior to beef in other important particulars.

### Rich in Food Lime

For example, one of the essential constituents of food is lime. Lime is necessary not only for the bones but for the brain, nerves, blood and other tissues. The body of a man weighing 154 pounds contains about four and one-half pounds of lime, or three per cent of the total body weight.

Lime constitutes about three-fourths of the total mineral contents of the human body. The tissues of the body are in a state of constant change, losing lime as well as other elements by the natural wear and tear. To replace the daily loss of lime requires an intake of about one-fourth of a dram, or 15 grains. If this needed quantity is not supplied regularly in available form, the bones become soft, the muscles lose in part their power to contract, the heart is weakened and becomes inefficient, and the blood deteriorates.

According to Cobez de Baca, one of the Spanish explorers of the Texas coast in the sixteenth century, the natives of that region carefully saved the bones of fishes and other small animals and ate them, after reducing them to powder in stone mortars, evidently to supply the need for lime.

The lack of lime in the food is no doubt one cause of the increasing prevalence of bone disease in civilized countries, and may be responsible for the early decay of the teeth which is becoming so nearly universal that the development of a toothless race is threatened. Evidently the teeth suffer loss of lime along with the other bony structures of the head.

It thus appears that lime is an essential element of our daily food. The almond contains so much of this essential food lime that it takes but ten and one-half ounces of almond meats to supply food lime sufficient for a day's ration, whereas to supply the same amount of lime would require 270 ounces, or more than 25 times as great a quantity of beefsteak, 9 lbs. of cornmeal and 11 lbs. of bread or potatoes.

## Rich in Iron

Another essential food mineral is iron. Iron is one of the essential constituents of the body. It is found in all living organisms, both animal and vegetable. Its importance to the growing plant has long been recognized by scientists, and is evidenced by the fact that iron abounds in the germ of cereals and other seeds. It is for the same reason, doubtless, that iron is found in relatively large amounts in the embryos of animals, as in eggs, particularly in the yolk of the egg. Iron is essential to life from the very outset.

In the animal body, the chief function of iron is to supply and maintain the hemoglobin of the blood, which is an organic iron compound peculiar to animals, and possesses a special chemical property by means of which it is able to absorb and condense oxygen, so as to give to it the active properties of ozone as an oxidizing agent, and to transport it from the lungs to the tissues.

This iron-containing hemoglobin is the chief constituent of the red blood corpuscles. Without iron, the body cannot make hemoglobin and hence cannot make blood cells, one of the most highly essential of all the body cells.

The twenty-five million red corpuscles floating in the blood stream of a man of average size have a combined area of nearly one acre or 150 square rods. This great area of oxygen-loving hemoglobin travels back and forth between the lungs and the tissues fifty or sixty times an hour, picking up oxygen in the lungs at one end of its journey and feeding it to the air-hungry cells at the other end.

The life of a red blood cell is only about six weeks; hence, of the 25,000,000,000,000 oxygen carriers in the body, 7,000,000 die every second of our lives; and to keep the number intact, 7,000,000 new red corpuscles must be created by the living forces of the body every second, one of the most striking illustrations of creative power at work with which science has made us acquainted. We lose each second one and one-half square inches of oxygen absorbing surface, which must be at once replaced.

For each one of these wonderful red cells, the precious hemoglobin is necessary. Without it, not a single one can be produced; and iron is absolutely essential for the making of hemoglobin. Without it there can be no blood-making, the blood cells rapidly diminish, the blood becomes thin and watery and loses the rich red color which paints roses upon the cheeks and rubies upon the lips of health.

When the iron supply is deficient and the blood is depreciated, the face, lips, gums and finger nails become pale because the red blood cells are reduced in number. In normal blood, a minute drop, half a line in diameter, contains not less than 5,000,000 red corpuscles. This number is greatly reduced in anemia, the blood-count becoming 3,000,000 or 1,000,000, or in very pronounced cases falling as low as 500,000 or even lower. This means that the oxygen-absorbing and -carrying surface of the blood, that is, the hemoglobin, has been reduced in proportion. Instead of 150 square rods of oxygen-carrying surface, we have only 90 or 60 or even 15 square rods, a reduction to one-tenth the normal amount.

This explains why an anemic person is short of breath, even when there is no trouble with the heart and lungs. He pants when he goes up stairs. He cannot run or even walk fast for a short distance without getting out of breath. There is nothing wrong with his breathing apparatus. The air is taken into the lungs properly and it comes in contact with the blood, but the blood does not take up enough oxygen because it is deficient in iron, and so cannot absorb the oxygen brought to it, the effect being just the same as though the air supply were in part shut off by disease or by injury to the lungs or by a deficient air supply.

Through the construction of red cells, iron is continually being lost from the body at such a rate that one-fourth grain is required to make good the daily loss. This amount of iron is found in 10.5 ounces of almonds, whereas 24 ounces, or nearly double the quantity, of ordinary beefsteak is required to furnish the necessary amount of iron.

## An Extraordinary Food

From these facts it will readily appear that the almond is a most extraordinary foodstuff. There is scarcely any other product of the animal or vegetable kingdom which approaches it in nourishing qualities, and as an all-round foodstuff it has no peer. Beefsteak is rich in protein, flesh-building material, but the almond is richer still. Beefsteak is supposed, though erroneously, to be the best of all blood-building foodstuffs because of its richness in iron, but the almond is richer still, containing twice as much; and besides furnishes a rich store of bone-building material, which is almost altogether lacking in beefsteak, and then provides in addition more than half its weight of one of the most delicious, digestible and wholesome of fats.

## Science Prizes the High Value of the Almond

Of course, the question may arise as to whether the protein, or tissue building element, of the almond is equal in value to that of meat. This question has been much discussed with reference to nuts in general, as well as the question of the digestibility of nuts. Recent researches have finally set these queries wholly at rest. One of the most important researches to determine the digestibility of nuts was conducted by Professor Jaffa of the California Experiment Station. His results showed that nuts were well digested and created no intestinal disturbances. More recent experiments have confirmed and extended the observations of Professor Jaffa. These experiments, conducted by Professor Cajori, of Yale University, in the Yale laboratory and in the laboratory of the Battle Creek Sanitarium, have finally definitely settled the question.

Says Professor Cajori, with reference to his results: "A few years ago a rather extensive series of digestion experiments were inaugurated at Yale University in an effort to settle the question of the indigestibility of nuts and also to test out some of the commercial nut products to find what effect roasting, boiling, and other processes that nuts are subjected to had on their digestibility. Through the courtesy of Dr. Kellogg of Battle Creek, it was possible to follow up these experiments with a series at Battle Creek. It is of the result of these tests that I wish to speak. One word regarding the method. The amount of food eaten by the individual or animal is weighed at each meal and the composition determined by chemical analysis. The intestinal output is collected, weighed and analyzed. From the difference in any substance, such as protein eaten in the food and the protein which appears in the body refuse, the amount digested and absorbed or utilized by the body is easily determined. For example, if 10 gms. of nitrogen is eaten in the food and one gm. appears in the feces, we say that the coefficient of digestibility of that protein is 90%; that is, 9 of the 10 gms. eaten were absorbed by the body. The average of a great many such tests on mixed diets has the following standard coefficients of digestibility: protein 93%, fat 95%, and carbohydrates 98%.

"Our digestion experiments show the following results: For protein digestion of nuts—almond 89%, pecan 84%, pine nut 89%, English walnut 83%, Brazil nut 88%, and cocoanut 88%.

## Why Nuts Sometimes Disagree

"How, then, explain the undoubted discomfort that many people experience after eating nuts? I believe the explanation rests on the fact that our common American way of eating nuts is not the rational way. We would not consider topping off a heavy meal with eggs, meat, or cereals, or eating these in large quantities between meals without realizing that we were exposing ourselves to possible digestive discomfort. No more then can we expect to eat nuts, which are even more concentrated or "heavy" than meats or eggs, merely as an adjunct, without occasional discomfort. Unpleasant results from so eating does not condemn the nut as indigestible—rather it condemns our mode of using that nut. Further, we must recognize that a nut is a hard compact substance, and that unless completely masticated, is not readily penetrated by the digestive juices of the alimentary canal. This was very well brought out in our experiments with dogs. The dog bolts his food, and where there were large fragments of the nut in the food they appeared almost unchanged in the feces, while if the nut was ground fine before feeding, it was readily digested. Comparisons of nut butters and nut pastes with the whole nut also brought out this point. The completely comminuted nut butters showed consistently higher degrees of digestion than the whole nut."

From the foregoing it is evident that the protein of nuts can be utilized as readily as the protein of meats and other foods, and that the reputation of nuts for indigestibility is not deserved. The whole fault is with the manner of taking them. Nuts should be used as a food staple, a major element in the bill of fare, rather than as a dessert, and special care must be taken as to thorough mastication, which is almost equally true of apples, bananas and numerous other fruits which possess a firm flesh.

## The Origin of Nut Butters

To overcome the objection that some people are unable to masticate nuts properly on account of defective teeth and to insure the proper assimilation even if not properly chewed, the writer about thirty years ago conceived the idea of converting the nuts by crushing and grinding, into a paste—in other words, chewing the nuts by machinery. The peanut was first utilized in this way and rapidly won its way to public favor. Now, many scores of carloads of that nut are eaten under the name of peanut butter.

Almonds were next used, and were found to make a delicious nut paste, or butter, which by the addition of water and a little salt, became a most delicious cream. In the form of almond cream or milk, nothing could be conceived in the way of nourishment which the body can more easily appropriate and more fully utilize.

The question may also be raised as to the quality of the protein of the almond as well as that of other nuts. Is nut protein equivalent to meat protein? Professor Cajori also made a study of this subject in the course of his investigations at Yale and at Battle Creek, and found the almond in no way lacking.

### Nut Proteins Equal to Meat Proteins

In recent years, it has been discovered that the proteins of our food are not utilized as such, but are broken up into smaller fragments, which have been termed "building stones," out of which the body is made. There are about eighteen of these "building stones," known to the chemist as amino acids. Some thirty or forty of these different amino acids, or "building stones," have been isolated. Of these, eighteen are needed for building the proteins of the human body. Proteins that contain all of these elements are known as complete proteins; others are known as incomplete.

While it is conceded that the proteins of grains and other seeds, as well as fruits and vegetables, are for the most part incomplete and incapable of supplying all that is needed for the construction of the body proteins, it has been fully proved that the proteins of nuts are in this respect superior; and experiments which have been made with the almond indicate that its protein is probably equal to that of milk, which is one of the most perfect proteins known.

Dr. Hoobler of Detroit a few years ago conducted an elaborate series of experiments for the purpose of determining the value of different butters in the production of milk by nursing mothers and wet nurses. He found that nuts produce more milk and milk of better quality than any other foods. His experiment showed nuts in this respect to be superior to milk and eggs or to any combination of these foods with other foods.

It appears that the almond, while presenting foodstuffs superior in quality to that of beefsteak, is at the same time equally digestible. Morgan and Heinz, of the University of California, have recently made a comparative study of the value of almond protein and the protein of wheat. Their research has demonstrated that the protein of almond meal is superior to that of wheat gluten. Other animal-feeding experiments conducted by Francis in the food research laboratories of the Battle Creek Sanitarium bear out the same conclusion.

When compared with other sources of protein, the almond thus shows its superiority. It is so rich in these splendid food elements that a few shelled almonds, not more than 15, weighing perhaps half an ounce, are equal in food value to an ordinary serving of beefsteak, besides being far more wholesome and palatable, and costing less than three cents, while the cost of the beefsteak may be anywhere from thirty or forty cents to a dollar or more.

Heretofore the almond has been considered almost wholly as a luxury and usually eaten as a dessert at the close of a sumptuous meal, which is certainly an error. This splendid foodstuff should become a staple article of food on every table, and the time will certainly come when the almond, with other good nuts, will fill a much larger place in the nation's bill of fare than at present. The Almond Grower's Association of California, with the co-operation of the U. S. Agriculture Department, in encouraging the growth of the almond is doing a work which will entitle it to an honored place in the economic history of this country; for the time is certainly coming, and it cannot be far in the future, when the animal industry will languish for lack of space for pasturage, and flesh foods for this as well as other reasons will fill a less conspicuous place in the dietary of the average man than at present.

## Meat Eating Involves Enormous Economic Waste

The late war has focused the attention of economists and public administrators upon the necessity for limiting the consumption of flesh foods. The annual per capita consumption of meat and meat products in this country is 164 pounds, or nearly half a pound a day for each citizen. To produce this half pound of meat it is necessary to feed to cattle, sheep, and hogs 20 times as much foodstuff, much of it in the form of grains, which might have been eaten direct by human beings, and would have afforded, pound for pound, more than double the amount of nourishment afforded by meat and at less than one-tenth the cost.

## The Great Food Commission Declared Meat Not Necessary

The Inter-Allied Scientific Food Commission which met during the war was without doubt the most authorative body on the subject of food and nutrition that was ever brought together. The members of the commission consisted of the following distinguished specialists, each of whom has long enjoyed both a national and international reputation as an authority in human nutrition. From France, Professors Gley and Langlois; from Italy, Professors Botazzi and Pagliani; from Great Britain, Professors Starling and Wood; from the United States, Professors Lusk and Chittenden; and from Belgium, Professor Hulot.

The question of a minimum meat ration was discussed by the commission, but it was decided to be unnecessary to fix a minimum meat ration "in view of the fact that no absolute physiological need exists for meat, since the proteins of meat can be replaced by other proteins, such as those contained in milk, cheese and eggs, as well as those of vegetable origin" (beans, nuts, and especially almonds).

Quite in line with this official action was a recent editorial in the *Journal of the American Medical Association,* perhaps the highest medical authority in the world, which states that "man's health and strength are not dependent on the assumed superior virtues of animal flesh as a dietary constituent."

Within the year 1918 there were slaughtered in the United States a hundred million beeves, sheep, pigs and goats, one whole beast for every man, woman and child in the United States. Of this vast multitude of animals, the Federal inspectors examined nearly two-thirds (60,000,000) and found one and a half per cent so badly diseased that the whole or part of the carcass was condemned. In other words, nearly a million (900,000) carcasses were found seriously diseased.

But there were 40,000,000 other beasts killed and eaten which were not inspected; and they were without doubt much more badly diseased, a fact which was in many cases, most likely, the reason why no inspection was made. Allowing that three per cent of these were diseased, which is a low estimate, the total number of diseased animals found in the 100,000,000 slaughtered was not less than 2,000,000, or one in fifty of the total number. And most of these were eaten by human beings either wholly or in part.

If we should abandon meat-eating in favor of nuts, we would not have to worry about what our victuals died of.

## Almonds Are Pure and Safe, Which Meat Is Not

Almonds, as we have seen, contain all the nutritive elements supplied by meats and in larger proportion and better form, together with other essential elements; hence are better prepared to serve the body as foodstuffs than are meats. Besides, nuts have the advantage of being clean, free from the products of disease and putrefaction. Meats of all sorts, as found in the market, with the exception of canned meats, abound with putrefactive bacteria to an astonishing degree. This is true of dried, smoked and salted meats as well as of the fresh meats and game which are displayed upon the walls of the meat shop. An examination of various meats made some time ago by the bacteriologist of the Battle Creek Sanitarium, showed the presence of putrefactive bacteria in almost unbelievable numbers, as will be seen by an inspection of the following table:

| *Specimen* | *No. Putrefactive Bacteria per oz.* |
|---|---|
| 1. Large sausage | 12,600,000,000 |
| 2. Small saugsae | 19,890.000,000 |
| 3. Round steak | 16,800,000,000 |
| 4. Roast beef | 16,800,000,000 |
| 5. Smoked ham | 1.293,600,000 |
| 6. Hamburger steak | 3,870.000,000 |
| 7. Pork | 3,781,200,000 |
| 8. Porterhouse steak | 900,000,000 |
| 9. Sirloin steak | 11,340,000,000 |
| 10. Tenderloin (well done) | 756,000,000 |
| 11. Tenderloin (rare) | 5,040,000,000 |

These results also agree with observations made by various other German and American bacteriologists. Decomposition of animal flesh begins immediately after the animal dies. Within twenty-four hours after killing, even though the carcass is kept in an ice box or refrigerator, the whole mass is permeated with putrefactive bacteria. Refrigeration even to a point close to freezing delays but does not prevent the growth of putrefactive organisms, although at lower temperatures the usual volatile products which give notice to the presence of putrefaction by an odor of decay are not produced. Persons whose stomachs manufacture a liberal amount of hydrochloric acid, an essential constituent of healthy gastric juice, are able to disinfect even highly putrescent meat, so that they apparently do not suffer any immediate injury when such meat enters the stomach. In a stomach which produces little or no hydrochloric acid, however, the process of putrefaction continues all the way through the alimentary canal, giving rise to the same poisonous substances which are present in the putrefying carcass of a dead rat or any other dead animal, and produces intestinal or alimentary toxemia with the multitude of mischiefs which grow out of this condition, among which may be mentioned all sorts of skin troubles, high blood presure, apoplexy, premature senility, Bright's disease, heart failure, gallstones—a list which might be increased by the addition of scores of other common, chronic maladies.

The almond is sterile and absolutely free from disease of any sort. No unpleasant effects have ever been known to follow its use; indeed, it has long been used in medicine as a remedy for certain maladies.

By the substitution of almonds and other good nuts for meats, all dangers associated with flesh-eating may be avoided; hence their use should be encouraged in every practical way. National and State legislators should make liberal appropriations for the study of the soil and climatic conditions best suited to nut culture, and otherwise encourage this infant but most important industry.

## A Ready-to-Eat Food

Nuts have the advantage over most other foodstuffs in the fact that they are ready for immediate use as they come from the hand of Nature. The protein and fats of which the almond almost wholly consists, starch being absent, require no cooking to render them digestible and are, in fact, more digestible in the uncooked state than when cooked. The only thing essential for the complete digestion of the almond is thorough mastication. Imperfectly masticated particles escape the action of the digestive fluids and pass through the alimentary tract like foreign bodies. To be digestible, the almond, like other nuts with firm flesh, must be crushed and finely comminuted. Almond butter and almond cream, when eaten, are completely absorbed. The almond contains besides more than half its weight of oil a substance known as emulsin which, when water is added, converts the oil into a very finely divided emulsion. The protein of the almond closely resembles the casein of milk.

Almond butter with the addition of a little water is converted into a delicious cream, which, with the addition of more water, becomes a delicately flavored milk closely resembling the milk of the cow in appearance, and with the addition of sugar the resemblance to milk, especially mother's milk, becomes still more complete. Such a preparation is in fact almost a perfect substitute for milk.

The almond is thus not only capable of taking the place of meat in the dietary but may also serve as a substitute for milk. Combined with malt sugar, it has, indeed, served a satisfactory purpose as a milk substitute to a greater or less extent in the writer's practice for more than 20 years, and has proved a life-saver for many bottle-fed babies by whom cow's milk was not tolerated.

Blanched almonds, salted almonds, various combinations with sweets, almond meal with macaroons, are all delicacies which in flavor and wholesomeness are not excelled by the daintiest product of the confectioner's art.

Apparently the appreciation of the almond as a food in this country has already outstripped its production, since of the more than 20,000 tons of almonds consumed in this country last year, less than a third was raised in this country. But if the production in this country increases at the rate of 50 per cent annually, as during recent years, the time may arrive when the market will be supplied by the home-grown product. If the half pound of meat daily consumed by the average American should be exchanged for a couple of ounces of almonds, rather more than a full equivalent, the present annual supply, home grown and imported, would only suffice for three or four days' consumption, and production would have to be increased at least one hundred fold. We predict that, as the great value of this wonderful nut becomes more fully known to the public, the demand for its use as a food staple will rapidly develop, and its production will become an important industry.

J. H. KELLOGG, M. D.

# Antiquity of Food Crops

According to Tibbles, an eminent English authority on foods, "the date of cultivation of the cereals cannot be discovered with certainty. Wheat was cultivated in Egypt before the Shepherd Kings; it was found enclosed in a brick of the Pyramids, to which the date 3359 B. C. has been given; but it was probably first cultivated at an earlier date in the valley of the Euphrates. The Chinese date the art of bread-making from about 2000 B. C., and in British India at least from the Aryan invasion. The Greeks became acquainted with it through Alexander's expedition (334 B. C.). The Arabs introduced it into Spain, and the Spaniards into America. Rye is not so ancient; it has not been found in Egyptian monuments; the Greeks did not know it, nor did the lake-dwellers of Switzerland in the Bronze Age. It probably had its origin along the banks of the Danube. Oats have been cultivated for 2,000 years in Europe. They were known to the Greeks, but the Egyptians did not cultivate them. Barley was cultivated in Switzerland and Italy before the lake-dwellers possessed metals, and some varieties have been found in Greece and Egypt.

"Indian corn was cultivated in America before it was discovered by Columbus, and undoubtedly it was a product of the ancient inhabitants of Peru and Mexico. Millet was cultivated in Asia and Africa in prehistoric times. There is evidence of its cultivation in China in 2800 B. C., and that it spread westward through Russia and Austria until it reached Switzerland and Italy in the Stone Age. Some forms of millet were cultivated in Egypt at an equally early period, and became known to the ancient Greeks and Romans. Indian millet, or durra, has been cultivated in Egypt for 4,000 years, and is believed to have had its origin in Africa, and spread thence to India and China.

"The potato originated in Chili, and its cultivation in North America and Europe began after the discovery of America by Columbus. The garden pea was brought into Greece and Italy by the Aryans from Western Asia. Beans were also first cultivated by the Aryans, and introduced by them into Europe; but the haricot, frijole, and Lima beans originated in South America. The cultivation of lentils in Egypt and Chaldea was begun before all history, but they grew wild in Greece and Italy before they were cultivated there. Many of our vegetables grew wild in Europe long before they were cultivated. The cauliflower was known to the Greeks and Romans. The cabbage was cultivated by the Medes and Persians; it was common at Nineveh and Babylon. The cultivation of onions appears to have originated in India; but they were known to the ancient Egyptians, and probably came from India through Egypt to Greece.

"The cultivation of fruit is probably not so ancient as that of cereals. Grapes grew wild in Southern Europe, but their cultivation was introduced by the Phoenicians. Records of wine-making go back 5,000 to 6,000 years. Apples and pears grew wild in Britain, but their cultivation was introduced by the Romans. The sweet orange came from China, where its cultivation is prehistoric; the citron from Western Asia, where it was cultivated by the Medes. The lemon was brought into Europe from the gardens of Egypt and Palestine. Pineapples first came from South America; bananas from Southern Asia, where they were found at the time of Alexander's expedition; but it is probable that they were first cultivated in the Malay Archipelago."

# Examples of Extreme Abstemiousness in Diet

Dr. Nicholas, in his interesting booklet, "How to Live on Sixpence a Day," gives many notable examples of extreme abstemiousness. We quote as follows:

"For six years St. Hilarion lived on fifteen figs a day, for three years on a pint of pulse a day, for three years on dry bread, from his sixty-fifth to his eightieth year on five ounces, and after that on four ounces.

"St. Anthony lived on bread and water.

"St. Gregory Nazianzen ate only bread and herbs.

"St. David of Wales and his monks lived on vegetables.

"St. Dominic and his followers rigidly abstained.

"St. Francis lived on bread and water, and was the friend of everything that suffered or rejoiced.'

"St. Catharine of Siena, lived on herbs, seldom eating bread.

"St. Charles Borromeo lived on brown bread and chestnuts; and when remonstrated wich for his meagre diet he said the Chrysostoms, the Bastils, and the Spiridions, though engaged in the most arduous labor, lived to be old, keeping perpetual fasts.

Ten years ago this month, in August, 1910, Florence Nightingale passed away at the age of ninety years. This year (1920) is the centenary of her birth; she was born May 18, 1820, at Florence, Italy. At the age of thirty-two she began her nursing career, studying hospital and nursing methods in Great Britain, France, Germany, Belgium and Italy, and was appointed superintendent of a private hospital in London in 1853. At the outbreak of the Crimean War, she was selected by Sir Sidney Herbert, Secretary of War, to superintend hospitals at the front. In October, 1854, she went to the Crimea, taking charge of thirty-eight nurses. In two months she had transformed the hospital, secured supplies, established sanitation, and reduced the death-rate from forty-two to two per cent. She returned to England at the end of the war, July, 1856. We are indebted to the W. B. Saunders Company of Philadelphia for the picture of this remarkable woman.

# Department of Eugenics

# Eugenics: Its Scientific Foundations and A Few of Its Social Implications

H. E. JORDAN, Ph. D.

Professor of Histology and Embryology, Department of Medicine, University of Virginia.

(*Continued from July*)

Heredity is a fact, and eugenics proceeds upon this basis. It could proceed with more certainty in any particular case if the factors and the laws of inheritance involved in any particular trait under consideration were known; but in the absence of such definite and full information it may confidently proceed, nevertheless. For example, whether feeblemindedness follows in inheritance strictly mendelian formulae or not, it is well known that the offspring of a feebleminded father with a feebleminded mother are always feebleminded or worse (Fig II.). It would be sheer nonsense to oppose advocacy of eugenic action in such case namely, the prevention of feebleminded matings, until we knew in detail all the factors underlying all the possible varieties of feeblemindedness, and the laws controlling the operation of these in heredity. The obvious procedure in this case is to prevent feebleminded reproduction. And similarly with other gross defects, especially such as behave in the manner of mendelian recessives in inheritance.

The most perplexing cases for the eugenists are those where the serious defect is apparently inherited in a manner similar to a mendelian recessive character. Take, for example, glaucoma, a serious condition of defective drainage in the eye, producing destruction of the retina and ultimate disease of the entire eye-ball; or consider the condition of susceptibility (or lack of resistance) to infection by the germ of tuberculosis. To illustrate: Take the case of a tuberculous man marrying a tuberculous woman. Assuming that these parents are actually pure recessives for the tuberculosis-susceptibility character (like the guinea-pigs for white coat color, previously described) then all the children would suffer a susceptibility to tuberculosis infection. Such matings should, from the standpoint of the welfare of the race, be discouraged. Take, further, the case of a pure recessive tuberculous individual marrying a pure non-tuberculous (dominant) individual. In this case all the children of the mating would be expected to be non-tuberculous, but actually dominant hybrids; that is, they would all carry a latent determiner for the tuberculosis diathesis. When such individuals intermarry, one child among every four, in accordance with mendelian laws, would be expected to be a pure recessive tuberculous individual, and under unfavorable environmental conditions would most likely become tuberculous.

The question then arises: Should an effort be made to prevent matings among tuberculous hybrids? Since prevention would seem to be practically impossible, the desirability of such procedure need not be discussed and the question need not be answered. But the question will not down as to what is eugenically the proper attitude, in connection with our efforts to rid mankind of the scourge of pulmonary tuberculosis, towards the marriage of tuberculous individuals. Assuming that offspring will result from such matings, is it eugenically better for tuberculous to marry tuberculous than for tuberculous to marry non-tuberculous? The proper answer is exceedingly difficult. In the former case the tuberculous stock, if only inbred, might at least soon die out. Viewed from a cold scientific standpoint, tuberculous intermarriages should be discouraged. And it should be recognized that marriage between a tuberculous individual and a non-tuberculous individual also involves risks as regards the welfare of future generations.

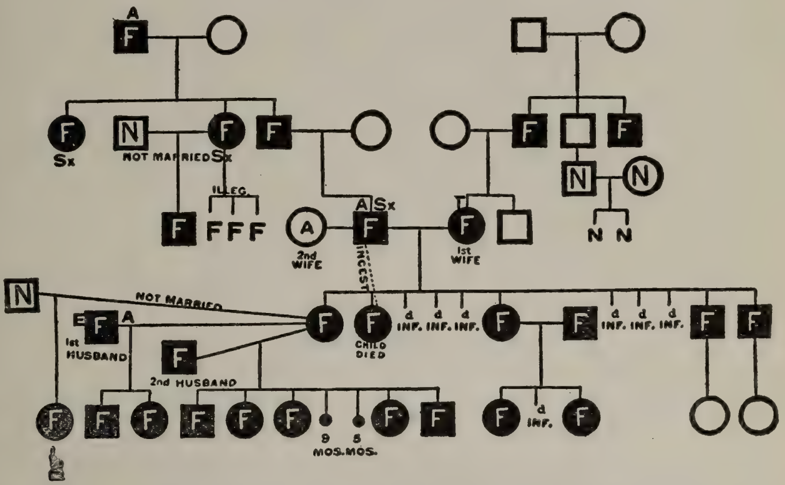


FIGURE 2. Pedigree chart (Goddard, 1910) showing inheritance of feeble-mindedness through five generations. Circles indicate females, squares indicate males. The solid squares and circles indicate affected individuals, the open squares and circles indicate either normal individuals or such whose condition is unknown. A, alcoholic; N, normal; Sx., sex-offender; d. inf., died in infancy; F. feebleminded; T. tuberculous; E, epileptic. The chart shows that two feebleminded parents produce entirely feebleminded progeny. (From Davenport's "Heredity in Relation to Eugenics," Henry Holt & Co.).

One must hasten to say, however, that knowledge of possible personal weakness or defect is no adequate cause for discouragement or pessimism, One is not necessarily personally or even eugenically doomed, though one is descended from glaucomatous or tuberculous ancestors. Moreover, no matter how poor one's ancestry as regards resistance to tuberculosis, if there were no tubercle bacilli, one could not become infected with tuberculosis. This fact emphasises the importance of attacking tuberculosis also from the environmental approach. It is at least theoretically possible to spend one's life in an environment free from tuberculosis germs. Furthermore, much can be done to increase one's general health and resistance by careful attention to personal hygiene and a strict regimen of personal living. To show what can be made, by will-power and perseverance, out of a congenitally weak body, and what can be accomplished in spite of physical handicaps, one may point to such salient examples as that of Dr. Trudeau, Theodore Roosevelt and Robert Louis Stevenson. On the other hand, however rich may be the congenital endowment of physical and mental strength, it may be impaired by unwise living or by a life under enforced unfavorable environmental conditions. There is probably no constitution so strong that its vitality cannot be reduced to the point where it becomes an easy prey to the tubercle and other harmful germs; nor a mind so virile that it cannot be destroyed by the microörganism of syphilis. We are discussing now the individual only; such acquired strengths over weakness, or weaknesses imposed on strength, have no direct effect upon the offspring of such individuals. This statement, however, must be qualified by calling attention to the fact that certain of these induced weaknesses, notably those following venereal infections, may produce sterility in the infected individual and subsequently in the innocent marital mate, and so eliminate germ plasms which may be racially of the utmost consequence.

## Eugenic Aspect of War

This leads naturally to the query regarding the eugenic effects of war. For war certainly deprives the race of much of its best germ-plasm, considered physically and mentally. It might be claimed that the harsh economic conditions of war and of the years immediately following war, work a racially beneficial effect in causing the elimination, through starvation, and the various diseases incidental to improper nutrition, of the defective, the unfit, and the weak. But these conditions eliminate also the infant portion of a population which is incapable of maintaining its proper own in this unnaturally intensified struggle for existence. War seems, eugenically, completely pernicious, in that it cuts off the best young manhood, dooms to unmarried life an approximately equal number of similarly fine young women, abets the disproportionate reproduction of the inferior elements, and at the same time that it reduces the general birth-rate, effects also an increased infant mortality within the involved stock.

But someone may say that the earth has been afflicted periodically with devastating wars since the dawn of history and still the human race goes on, apparently no worse; in some respects greatly better than at the beginning. Such a statement cannot be categorically refuted. A complete appraisal of this aspect of the question involves too many variables to permit of clear-cut conclusion. One may, however, express his serious doubts whether there is anywhere in the world today the race or community equal, mentally, physically and perhaps even morally, to the Greeks of the time of Pericles.. To put this point in sharp relief, one need only contemplate the effect upon the race if, instead of the 8,000,000 or more men actually killed, and the millions more dead of starvation and disease, the same number of individuals had been selected for destruction from the physically and mentally inferior levels, including all those under institutional care, as in reformatories, insane asylums and penitentiaries. Surely no one will attempt to argue that the human race has been improved, or even unharmed, by the destruction of those actually destroyed by the war in lieu of those preserved in institutions during the war.

Another line of argument offered in justification of war approaches the question thus: Since the time of Malthus, it has been clearly recognized that unchecked human reproduction tends to outrun the food-supply. Wars then would seem to be necessary to keep the race within the limits of the possible food supply. In reply it may be admitted that certain regions of the earth are over-populated; also that certain wars may in the last analysis be caused by the economic group of an over-populated section attempting to extend the limits of its economic life. But such partial statements ignore the fact that vast favorable areas of the earth's surface are far from adequately populated. Also, that not quantity but quality, is the fundamental desideratum; that no particular human variety, whether so-called nation or simply a fairly homogeneous ethnological group, combines in its germplasm all the eugenically most desirable human traits; and that the eugenic menace under present conditions concerns the enforced, and in part voluntary, reproductive restrictions operating among the eugenically superior classes, and the concomitant disproportionate fertility among the eugenically less adequate elements. However much one may feel inclined to condemn the foregoing statements as superficial and scientifically unverified, or perhaps unverifiable, no one would be willing to admit the logical alternative that the race could be improved relatively more by suppressing reproduction among the physically, mentally and morally upper 10 per cent than by preventing reproduction among the physically, mentally and morally lower 10 per cent. War not only operates to effect the former result, but it aggravates this result relatively by allowing increased fertility among the lower 10 per cent in the face of the destruction of much from the eugenically superior levels.

Since the making of wars is largely the doing of statesmen, using this word in a wide sense to include all men immediately responsible for governmental policy, the question will not down whether these men ever seriously consider life and society from a eugenic viewpoint. The question should perhaps be put: Can these men, in view of their education and training, look at life sympathetically from a biologic and eugenic standpoint? Do these men ever seriously ponder the fact that humans are fundamentally animals, and in consequence strictly subject to biologic laws? It seems improbable to me that a man can so view life unless he has had a thorough grounding in the fundamental data and generalizations of biologic science, especially embryology and its central interest, heredity. But how few statesmen have such grounding! The eugenic viewpoint, so essential in statesmen as concerns an attitude favoring racial health, would then seem to be a matter of a more complete education. One may at least urge that a knowledge of biology, including embryology, with the data of heredity, is quite as important a discipline in the making of a statesman as a knowledge of law, history and economics.

The same point may be urged, and quite as appropriately, with regard to the clergyman. I venture to claim that thorough instruction in biology is quite as essential for the proper training of a clergyman as Hebrew, Greek literature and Jewish history, or any other subject of the complete curriculum of the Divinity School. Eugenic conduct, personally and en mass, depends upon a willingness to conform to eugenic ideals, which willingness can only follow a sincere conviction of the practicality and desirability of such ideals. Thus eugenic conduct closely connects with practical religion, at least in-so-far as religion is potent to determine human conduct. Personal conduct as regards racial welfare is hardly less the concern of applied religion than of applied medicine and applied statescraft.

I appreciate as fully as any possible critic that the forgoing analysis of our problem of eugenic conduct offers nothing specifically very definite. However, frank admission and understanding of this fact is of great importance for the success of eugenic ideals. Much harm has been done to the appeal of such ideals by the fantastic claims made regarding the scientific foundations of eugenics, and by the stupid propaganda in their interests and by half-baked eugenic programs. Perhaps the most definite conclusion concerns the necessity of thorough education of youth in the biologic fundamentals and in the relation of these fundamentals to personal and racial conduct.

Finally we come to this conclusion: The individual, impressed with the racial necessity of eugenic efforts, meets almost immediately with obstacles. He finds strong opposition made by traditions, by superstitions, by prejudices, by misconceived and misdirected charities, by the inherent human impulse for combat finding its most spectacular expression in the institution of war, and by the reluctance on the part of organized religion and statescraft to view life biologically. Such an individual may, under the circumstances, very naturally despair of accomplishing anything. But self-respect demands that this individual do not surrender or compromise his convictions, and that he personally practise and live his belief. Indeed, once grasped, surrender of the eugenic viewpoint is impossible, for nothing so satisfactorily unifies life and its problems of conduct, and so sharply gives point and direction to one's actions, whether they concern science, religion, statescraft or morals, as this ideal and viewpoint. Thus, whatever would seem to harm the race would appear to be wrong, whether this wrong be called ignorance, sin, mistake or vice. The most effective way, therefore, of eventually attaining to a eugenically ordered society would seem to be to accord biologic research the freest scope to establish the scientific foundations for eugenics, to have each one impressed with eugenic ideals rigidly practise his convictions; and finally to include among the upper courses of the common school curriculum proper instruction in the fundamental biologic data and generalizations, and their eugenic implications. Given the indisputable facts, the mass of humanity will think and act aright. As regards eugenics, the present trouble is not so much that people do not think aright about this matter as that they do not think about it at all. Nothing is easier in education than to arouse interest among healthy youth in the subjects of heredity and eugenics. This fact makes the responsibility towards youth in this matter almost appalling. More real bedrock scientific facts are urgently needed. The inclusion of such facts as they accumulate in a simple, serious and rational plan of complete education, and their presentation, with a proper mingling of reverence, reserve and zeal, is of cardinal importance in any effective effort to improve the race and the conditions under which human society may slowly approximate perfection .

## DEPARTMENT OF PHYSICAL EDUCATION

**Conducted by C. WARD CRAMPTON, M. D.**

Dean of the NORMAL SCHOOL OF PHYSICAL EDUCATION, Battle Creek, Mich.

# The Measurement of Posture In School Children

The measurement of the posture of children in school should be made as simple as possible. It should be based upon sound scientific principles, but it should be relieved from the necessity of painful accuracy of scientific method. All measurements of posture whether scientific or merely practical should be based upon the recognition of the fact that good posture is an evidence of good gravity resistance, for bad posture is on the other hand a submission to gravity. If the child is standing as tall as it is possible for his physical frame to stand, he is in good posture. If gravity pulls him down an inch or two or three, he is in correspondingly bad posture.

Bad posture may be, therefore, measured by decrease in height. This may be shown by actual measurement of height or by observation of the contour of the body in profile, for a poor posture will show various displacements forward and backward. If, for example, we take a piece of wire thirty-six inches long and lay it upon a yard stick in a vertical position, it will, if the wire is perfectly straight, measure just thirty-six inches. Now let us take this wire and bend it slightly at the middle, and call this the position of "hips forward." Bend it also at twenty-four inches from the ground, making an "increased dorsal curve." Bend it again further up, corresponding to the "head forward" position, and then lay it alongside the yard-stick, and we shall see that the wire, although it is thirty-six inches long, measures only thirty-two or thirty-three inches or possibly thirty-one inches, depending upon how much we have bent it at the various points corresponding to the hip, back and neck. This, then, is the way to measure how bad the posture is.

Other measures of posture may be obtained by noting actual visceral ptosis, i.e. the depression of internal organs below their normal positions. If the abdomen bulges and the chest is flat, there is bad posture and visceral ptosis.

We should be able to arrive at an index of comparative girths of chests and abdomen. In a healthy young man, the maximum chest girth should be from 25 to 50 per cent greater than the smallest abdominal girth; in woman it might be less. The proportions of 5 to 4 and 4 to 3 are probably normal. This measurement is complicated by the amount of abdominal fat and other factors. Circulatory ptosis can be determined by the author's test, which is based upon an observation of the systolic pressure and heart rate in the horizontal and vertical positions.

For the school room, however, we wish to measure posture merely to stimulate improvement. For this purpose there is offered a chart showing successive photographs of the same individual ranging from perfect posture to very poor posture. This indicates that a child may have excellent, very good, fair, poor or bad posture, that it is possible for any child to be either good or bad in this regard. It is evident, on the one hand, that good posture is not impossible for any one if effort and application are brought to bear, and on the other hand, it is evidence that those who have good posture may, if they are not careful, tend to lose it.

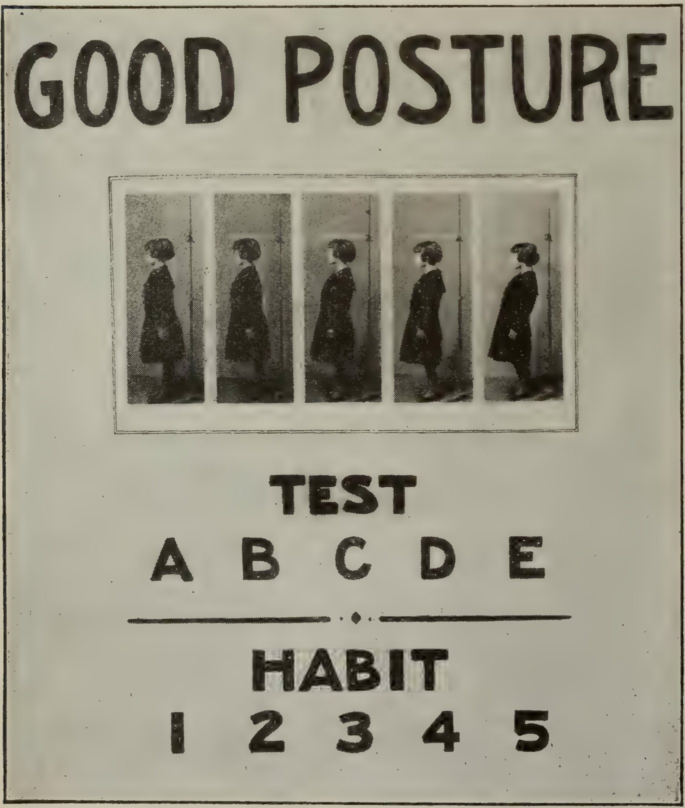
In this respect, an important distinction must be made. Many children can assume good posture during a posture test, but make no effort to keep good posture at any other time. Hitherto they have been placed in the good posture division, but they deserve this distinction far less than moderately good posture children who try very hard all the time.

I strongly recommend that good posture tests should be continued in a standard fashion, *i. e.*, while standing, marching and exercising, but that in addition a rating should be given for habitual posture, and I suggest the following set of instructions for the teacher:

### The Posture Rating

1. The teacher should be provided with posture charts showing a child appropriate in size to grade and showing the five posture positions.

2. She will conduct a test in posture including standing, marching and exercising, with one half of the class acting as assistant judges while the other half is being tested.



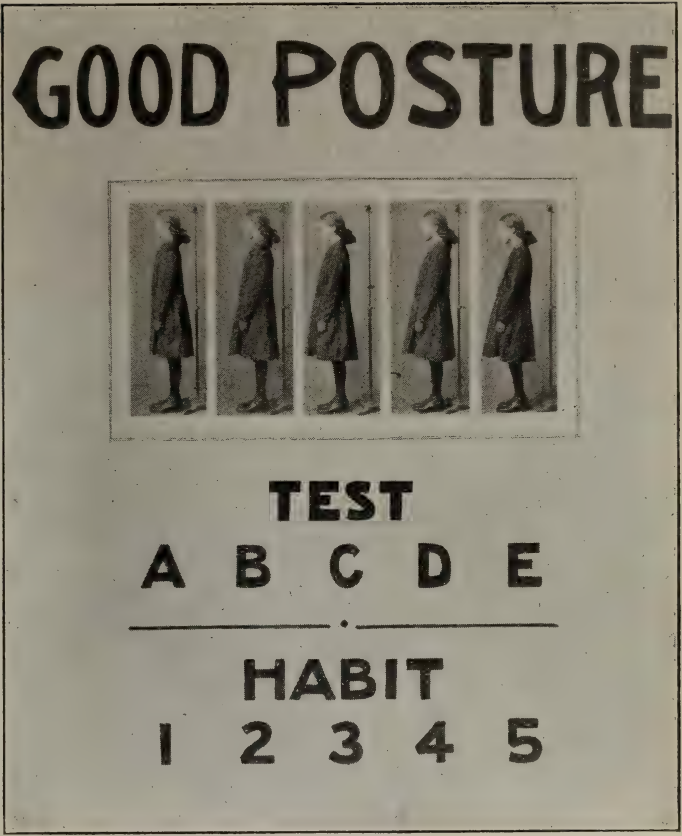
Good Posture Chart. For Lower Grade Girls in Elementary Schools.

3. The pupils will be graded *on this test* with the letters A, B, C, and D, corresponding to the pictures on the chart.

4. The teacher will observe the posture habit of pupils in their daily work, particularly upon standing for recitation of lessons, writing at the blackboard, marching to assembly and, in short, rate the pupils on their habitual posture.

It is preferable to have one or more posture monitors selected because of their superiority in physical training, in good posture and other physical training matters, and it shall be the duty of this monitor to record the ratings and relieve the teacher of the time and trouble rather than to nag and browbeat his fellow pupils, as monitors are sometimes prone to do.

The rating for habit in posture should be in numerals 1, 2, 3, 4, and 5, referring to the values exhibited on the chart. Thus we will have each pupil rated by letter and by number very much as business organizations are rated in Dun's financial report. (A) will stand for the best posture on test, but the pupil in order to get (A 1) must stand in good posture all of the time, otherwise, if he slumps, he may get a rating of (A 2) or even (A 4) or (A 5). A pupil in (C) posture may be (C 4) or (C 5), depending upon his posture habit. It is theoretically possible for a pupil in (C) posture to be in (2) or even (1) on habit, because some pupils during the test have an inconquerable tendency to assume rigid over-straightened posture which cannot be rated perfect; but when they are unconscious of observation, sit and stand perfectly.

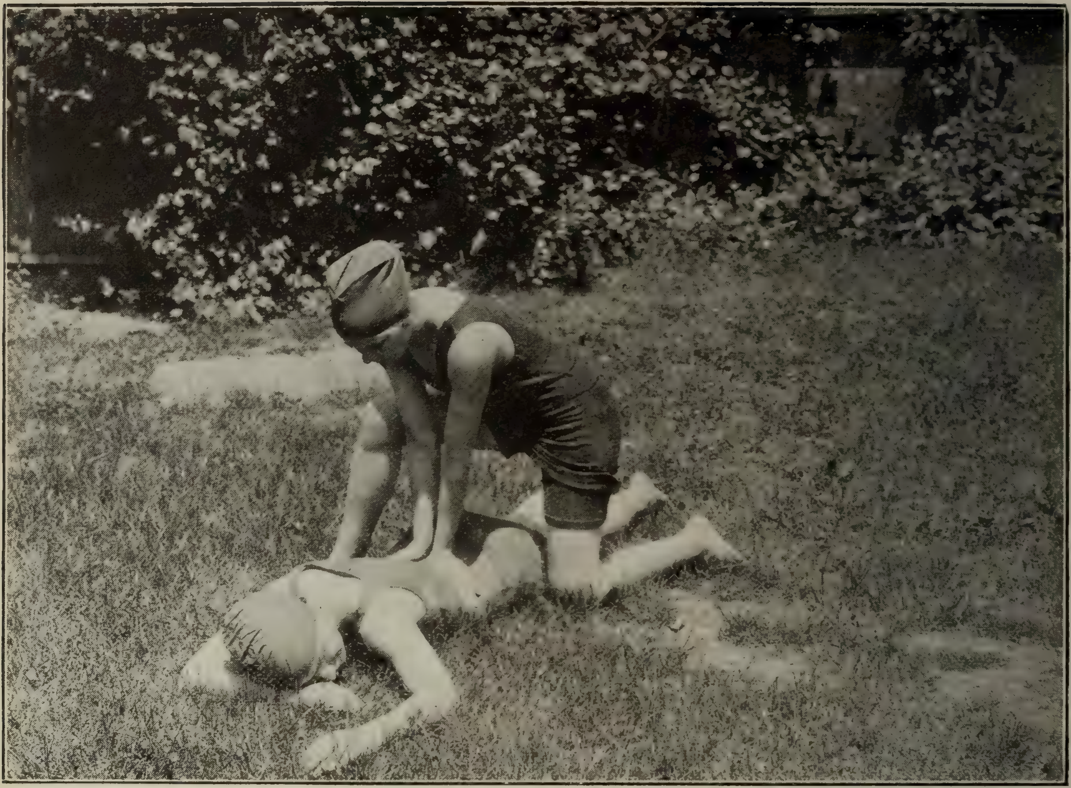


A Good Posture Chart. For School Room Use. Upper Grade Girls.

Pupils and teachers alike take quickly and easily to these ratings for (A 1) has a well-understood significance the world over, and all departures from it have a common meaning.

## Summary

Good posture is important, not as a thing in itself, but as an evidence of the sturdy, strong vitality of which it is an expression. Teachers who work for the Health, Happiness and Efficiency of their pupils will lead them often into the bright sunshine for their exercises, dances and games. They will open the windows frequently and take stretching and static exercises. They will bring the sunshine of happy, high idealism into the class room, and they will personally exemplify the beauty of wholesomness. Not every one is given the privilege of making deep and everlasting impressions upon the lives of as many persons as is the school teacher. The Chinese have a saying, "If you would have your words last a thousand years, carve them upon marble. If you would have them last forever, carve them upon the heart of a child."



# Shaefer Method of Artificial Respiration for Use in Cases of Drowning and Asphyxiation

The clothing should be loosened at the neck and waist. Bare the legs and arms, and have someone else slap and rub them vigorously. Place the subject face downwards and turn his head to the side. Kneel astride the hips. Place the hands with the thumbs nearly touching, fingers out, just below the shoulder blades, on top of the lower ribs. When all this is done, begin slowly and emphatically to rhythmically compress the chest as follows:

Swing forward with the whole weight and press downward and forward energetically with the shoulders directly above the hands; keep up this pressure for three full seconds (remember this is not three counts, but three seconds; one can count as much as five in one second). At the end of the three seconds, release the pressure and swing back without removing the hands; keep the arms straight, relax and rest, waiting until three full seconds have again elapsed, and then repeat the pressure.

The movement should be quick and energetic and the pressure vigorous. Keep this up until breathing is established naturally and until your patient is again conscious. Under no circumstances cease efforts until an hour and a half after all signs of life have ceased. It is important to remember that persons who were practically dead have been brought to life by the perseverance of the person in charge, and have recovered after an hour or more of apparently lifeless condition through artificial respiration.

While artificial respiration is being performed, the assistants should be rubbing and slapping the patient's limbs and applying aromatic spirit of ammonia to the nostrils. The friction of the limbs is for the purpose of stimulation and for warmth. When the patient becomes conscious, he should be given a half teaspoonful of aromatic spirits of ammonia in a half glass of water, and wrapped up in a blanket to rest, with hot bricks or hot water bottles about him. He should be kept warm and comfortable and carefully watched for two hours or more.

# Intensive Athletics

Intensive Athletics is the old-fashioned type. By the process of intensive selection, the best twenty football players in a college of five thousand men are selected to form the team and its squad. These are the men, who, by heredity, environment, and training, have become as nearly as possible ready-made football players, heavy, agile, and rugged. They are as nearly the type of the old Roman gladiator as modern selection offers.

The primary purpose of this selection is to produce a football team that will win games. It is not to develop the football players into better citizens or even to make them more physically fit. It is certainly not the purpose to favorably affect the physical fitness or condition of the balance of the undergraduates. It is not designed to improve the ethical, moral, or spiritual well-being of the student group.

All these things are well enough, but it is not the purpose of the football team and its squad to be concerned with them. Its one sole vivid goal is the winning of games and nothing else. If the college professors and students of education, philosophers and biological engineers were to realize this fact, they would regard college football less as an irritating student activity which is unaccountably more popular than gymnastics and would understand that it is merely a human racial phenomenon to be accepted and regarded as such.

The football team arises from the students, not from the faculty. It is a student activity pure and simple. It springs from the human desire for competition. The virility of young manhood is by common racial acceptance measured by his ability to outrun, outjump, outclimb, outthrow, and outfight his brothers. These activities have made the human race what it is. By them it has survived. They measure the man, *homo sapiens,* as a living member of the biological chain. The desire for these activities and for competition in them is instinctive. The more powerful they are, the better for the race; laws, rules, regulations, professors, deans, and faculties to the contrary, notwithstanding. Where this urge for trial, for supremacy, is weak, there is a sure irrefutable sign of masculine decadence and approaching biological death. Football, basketball, track athletics and baseball are its most popular forms today; in mediaeval times, fencing, broad swords, foot races, tossing the stone and jousting, and all were represented in the ancient Greek, Roman and Babylonian games.

The form of selection of the champion team or the champion individual upon whom is to rest the honor of the college is an old one. It is descended exactly from the selection of the king's knight to joust against some other knight when upon the fate of his trusty spear and sword hung the decision as to the merits of the groups represented. Thus, today, the football team representing the Ohio State University has brought renown and glory upon its beloved alma mater. It has made the city of Columbus even more renowned, while the State of Ohio has gained a new significance in the minds of thousands; and this from the efforts of only twenty young men. The other few thousand students in Ohio State University gain but little.

The member of the representative football team gains nothing he did not previously have. It is true that his quality of muscle, brains, aggressiveness, and general dash have become better. He has in all probability become over-trained, and football has likely done him harm. He may have broken a leg, or sprained his back, and may limp the rest of his life. Possibly he may have been killed!

Thousands of his fellow students and friendly enemy students have seen him perform and have paid thousands of dollars for the privilege. This money has been put into student hands, as a rule under faculty control and has been spent again for football or other similar forms of athletics. In the minds of some, this is an abuse. The athlete himself may have been bought from a neighboring small college, as soldiers of fortune have in the past been purchased. He may have been picked up by the college scout from a far-off high school, his expenses paid to and through college by a hidden athletic scholarship provided by enthusiastic and none too scrupulous alumni. This is dishonor! And although vigorously fought against by all earnest faculty and student organizations, these practices still flourish year after year in almost undiminished power, training young men to deceit and setting cynical flaws in the newly welded metal of their character.

It is not, however, true that the effect of this intensive form of athletics is without value to the student body. Day by day they watch the training of the team. It engages their time, thought and attention, and affords an emotional outlet, and as a rule a salutary one. They share with the team the increased tension of the training until the great day of competition arrives, and as they sit upon the bleachers, it is not merely vicarious exercise that comes to them. They shout, cheer, and sing, urging their team to greater efforts and high attainments. This is wholly beneficial; for it provides an attachment of the individual to a mass greater than himself, the beginning of altruism, which is the soul of democracy. If the college teaches this lesson well, it justifies completely its four-year curriculum of incidental required subjects. It is vitally important to America that Americans shall experience deeply the urge of the mass, the strenuous will to fight, and if need be, to die, for the big group. Upon this rests our social structure; and as the years progress and human intercourse becomes even more intimate, it will be more and more necessary. The great American game and the great American college spirit is a vital spark from which the great flame may be kindled. If any one wishes to carry an understanding ear to the Yale Bowl or the Harvard Stadium, he will hear the roar of 10,000 voices as one stupendous utterance of the spirit of 10,000, each for himself, but something bigger, greater, the great voice of the great university itself.

# HOME HYGIENE and ECONOMICS

# Home Hygiene of Children

EDNA NEIGHBORS

*(Continued from July)*

Children, like adults, require three typical foodstuffs: the proteins, which are derived largely from milk, eggs, bread and cereals, and are used to build and repair the tissues of the body; the carbohydrates (sugar and starches) which are obtained mainly from vegetables and fruits, to supply heat and energy; the fats, as butter cream, and oils, which also furnish heat and energy. However, there are very few foods which can be classed as pure protein, pure carbohydrate, or pure fat. For instance, the potato is of very high value as a carbohydrate, yet it contains a good percentage of protein and also some fat. The same is true of the cereals. Eggs owe their greatest value to their protein content, but they, too, are rich in fat.

## Necessity of Mineral Salts in Body Building

A fourth food principle, the mineral salts, has a peculiar importance in the proper development of the body. The high percentage of lime found in the bones is a good illustration of the use of minerals in the building of the body. Milk is the most adequate source of the lime so necessary to the making of good bones. For this reason alone every growing person should have his full quota of milk. A child nurtured on meat and bread, especially those breads made of white flour in which the entire grain is not used, does not obtain the lime requisite for the proper development of its frame. Not only do defective bones result from a diet deficient in lime but also poor teeth. The most zealous care of teeth lacking this element will not, in many cases, save them. So if you wish your child to have a good framework, and good teeth, which have a most direct bearing upon good health, give him milk, fruits, cereals comprising the entire grain, graham and whole wheat breads, egg yolks, and potatoes which have not been deeply pared. Never depend upon supplying the lime requirements by means of lime water. Food lime is the only available lime for the use of the body.

Iron is another equally essential mineral, since it has much to do with keeping the blood in good condition. Impoverished blood is in itself a most serious disease, and is resultant of many complications. Iron is found abundantly in some vegetables, like greens, carrots and onions, and is more plentifully supplied by some fruits than others, for instance the strawberry and the orange. Children are not apt to like greens, mashed carrots, and many other vegetables most beneficial to them, but they should be taught to eat them. Fat is best given to children in the form of butter or a little cream. A small amount of nuts reduced to a homogeneous mixture in the form of peanut butter, for example, is very good for a child of five, six or more years.

### Not Too Many Sweets

Children at an early age can easily take care of well-cooked cereals; but as previously stated, those cereals in which the entire grain is used are preferable to polished rice or cream of wheat. It is often advisable to use a thoroughly cooked, warm cereal for breakfast and Shredded Wheat or flakes for the evening meal. Little, if any sugar should be used with the cereals, since excessive sweets blunt the appetite and are injurious to the stomach. Sugar is a wholesome carbohydrate, but for children only the amount found in their dessert is best. For reasons before given, candy-eating between meals must be discouraged. Some candy may be given as a source of carbohydrate, but it is best taken at or near the meal time as a portion of the dessert. In the cereals, breads, potato and other vegetables (mashed for the young child), and fruits, the child gets his requirement of carbohydrate, or heat or energy-producing foods. The bread must be, if possible, either graham or whole wheat. Never allow griddle cakes, fried cakes, hot biscuits and rolls. Toasted bread and crackers (many excellent varieties of which are on the market) are good not only as food but also for exercise to the jaws and for the development of good, sound teeth. A diet consisting largely of cooked cereals, toasted breads, and potatoes is likely to be conducive to a poor elimination, and for this reason it is absolutely necessary to add either fruits or fruit juices and soft vegetables to the diet. Vegetables act as a laxative, besides furnishing the requisite mineral salts.

### Avoid Too Much Protein

One egg a day, preferably the yolk, is good for the child over three or four years of age, but it does not follow that three or four eggs a day would be even better. If he drinks three glasses of milk each day and eats one egg, his requirement of protein is well taken care of, considering the fact that the cereals and breads contain also a fair percentage of protein. If the child is allowed to partake of meat, together with his milk and egg, his diet is excessively high in protein, which places a difficult, destructive work upon some of the most delicate organs, the kidneys, for example. The body demands a balanced diet—a diet with a correct percentage of protein, fat, and carbohydrate. This is as necessary for children as for adults.

As the child grows older and enters school, the same kind of dietary as here briefly outlined should be followed. The food value of the vegetables may be increased by the use of cream sauces and butter. Plain cookies and cakes are also of good food value, and harmless.

### Growing Children Require More Food

The demands of growing children for nutriment are relatively large. Unlike the adult, they require food materials for growth in addition to that needed for the maintenance of the ordinary body functions. A normal boy of fifteen—at a period of vigorous growth—is active a great deal of the time and seemingly has an insatiable appetite. The portion of food actually stored up each day in the form of either muscle or adipose tissue is often quite small, and cannot be the immediate cause of the large demand for food. The nutritive demands of boys and girls of the early "teen age" are heightened because of chemical activities. The requirements of children in years just prior to the "teen age" is, however, much less, and it is a very easy matter to overfeed them. In this way the foundations for many subsequent "stomach troubles" are laid.

The digestive apparatus of the child is extremely delicate and far more liable to bacterial invasion than that of their elders. This explains in part the easy susceptibility of children to intestinal infections. Hence the necessity to protect the alimentary tract against the introduction of undesirable organisms by unfaltering carefulness as to the food which children eat. Food once sterile does not necessarily remain so indefinitely. Great care must be taken with the handling of food. This is true in particular of milk, which is so easily contaminated. It must be kept clean and fresh by absolute cleanliness in the handling of it. The introduction of the so-called harmless preservatives, which places a premium upon dirt by rendering cleanliness unnecessary, deserves a complete taboo.

### Eat Slowly and Chew Well

"The habit of eating slowly and chewing the food thoroughly must be insisted upon. If this is begun at an early enough age, it is easily enough learned and will prove to be a valuable acquisition for later years. If the child eats either with an attendant or with the rest of the family, he should be allowed to talk to a reasonable extent; speech should be regulated, not forbidden, for with children, as with adults, the act of speaking causes useful breaks in the steady course of masticating and swallowing food; it allows the gastric contents to be well mixed with the secretions of the stomach, and at the same time provides an atatmosphere of social enjoyment that a child may claim as well as his elders. So long as there is a reasonable and healthy discipline in the household, every child should be allowed to talk, to take part in the family life, to feel that he is an integral part of the home circle, and to realize that his words—even if they are not heavy with wisdom—will receive the consideration and attention which abiding love and a mild toleration dictate. The ordinary child whose environment provides suitable examples of self-restraint and good manners learns in a surprisingly short time how to conduct himself within sufficient bounds to be reckoned as a human being, and not as a more or less untamed animal."

Sound sleep, exercise in the open, a reasonable appetite satisfied by wholesome food, are factors largely concerned in converting flabby flesh into firm flesh, pale cheeks into rosy cheeks, and a peevish nature into a happy nature—in fact, an abnormal life into a normal life.

# "Subway" Bakery in Verdun

An underground bakery furnishes all the bread used by the refugee population in the ruined city of Verdun. No other building was sufficiently undamaged to house a bread-baking establishment for the returning townspeople, so the great "subway" ovens are daily turning out long, crisp loaves which compose the principal food of those toiling among the ruins.

Several times each day the bread is brought to the mouth of the black cavern beneath the great walls, where lines of people await their rations.

The bake shop is a part of the famous underground city of Verdun, built after the war of 1871 and designed to house 30,000 persons during an attack. During the Great War, thousands of soldiers and a few refugees lived in this subterranean abode while the city was under fire for nearly five years. The bakery was in operation during the whole time.

The American Red Cross has a large depot in the heart of the city and has supplied clothing and some articles of food to the distressed civilians.

# The Energy Expended in Housework

Benedict and Johnson have recently (1919) made a series of observations for the purpose of determining the energy expenditure required by ordinary light household activities. The observation was made by a study of the energy output before and after entering a large air-tight chamber in which fifteen or twenty young women were engaged in performing some household operation, or doing exactly the same thing in the same way.

The conclusions reached may be briefly stated as follows:

1. When sitting quietly in the experimental chamber, two hours after a meal, the energy expenditure was one-half a calorie per pound of body weight per hour.
2. Reading aloud increased the energy expenditure 3 per cent.
3. The energy expenditure when singing was increased 22 per cent.
4. The exercise of plain sewing occassioned a smaller expenditure of energy than singing, being less than two thirds as much, or 13 per cent.
5. The energy expenditure in standing was 9 per cent greater than in sitting.
6. Sweeping caused an increase of 150 per cent.
7. Moderate walking increased the energy loss 250 per cent.
8. Dusting increased the loss by 134 per cent.
9. The energy loss occasioned by the act of rising up and sitting down once a minute during three minutes, showed an increased energy loss of one-third of a calorie, or 60 per cent of the energy lost in the sitting posture.

# Maternal Impressions

By a maternal impression is meant an injurious physical modification of the child through the influence of some harmful state of mind in the mother. There is current more misinformation on this matter than almost any other connected with the whole subject of maternity. The underlying anatomical facts are so technical that a simple brief explanation is somewhat difficult; but since the belief in the "marking" of babies is so widespread and productive of so much anxiety, it will be comforting to many women to learn on what slight foundations the belief rests. Those who hold to this possibility consider that if the mother is injured in some way or sees another person injured, or observes a deformed or defective person, that the impression thus made upon her mind will repeat itself in some corresponding defect in the child's body. Doctors and other scientists are now practically agreed that, most happily for all concerned, these opinions have no basis in fact. Some of the reasons for this conclusion are:

1. So far as is known there is no connection between the mother and the child in the uterus by which nervous impressions can be conveyed. The only communication between the two lies in the interchange of the materials of nutrition and excretion through the placenta, where, by processes not yet clearly understood, the food which the de-

veloping child needs is extracted from the maternal blood and the waste products resulting from the child's growth are taken up by the maternal circulation and disposed of with those of the mother. The mother's blood never enters the child, so that even if the blood were able to convey nervous impressions, the fact that the two circulations are separate and distinct makes the direct injury of the child in this way an impossibility. Indeed, it appears that Nature, in thus erecting a barrier between the mother and child, has specifically provided for the protection of the fetus from such injuries.

2. There are few mothers who have not at some time during their pregnancies had experiences of a disturbing nature of greater or less severity. Accordingly, most babies ought to be born "marked," if this belief is true. Manifestly this is not the case. It is not the case oftentimes, even when the result has been expected. An American obstetrician of wide experience says that in his opinion, based on an observation extending over a number of years among all classes of mothers, the cause which was expected to show some harmful result to the baby was ineffective in ninety-nine cases out of a hundred, and that the hundredth case was a coincidence. When one considers the great number of strange and unhappy things that happen about us every day, it is not remarkable that pregnant women should encounter them sufficiently often to bring about many odd and striking coincidences.

3. Many women do not realize that they are pregnant until the sixth or eighth week, and do not usually begin to worry about the baleful effects which they hear talked about until pregnancy is well advanced. Investigation has shown that the form of the child is established by the beginning of the third month, therefore disturbing events which occur in the later months plainly can have no effect.

But it must not be assumed from what has been said that the mother is therefore a passive instrument in the process of embryonic and fetal growth. The harm which a mother may do her child in the uterus is not in the fortuitous, accidental manner above suggested, but rather by her failure to order her own life in the way that will result in the highest degree of health and happiness for herself and, therefore, for the child. For, although the child is undoubtedly protected from direct injury by means of occurrences outside the control of the mother, nevertheless he is subject to harm or benefit from conditions that are usually quite within her own control. As has already been said, the child in the uterus is entirely dependent for its development upon the materials of nutrition which it extracts from the blood of the mother in those mysterious processes of interchange which occur in the placenta, and it is only through nutrition that the mother is able to influence the child's future. If then she lives in such a manner as to establish and conserve her own health, taking plenty of sleep and exercise, eating sensibly of simple food, and in every way striving to take the best possible care of her own body, so that the digestive, assimilative, and excretory functions are carried on with the highest degree of efficiency, she may be quite sure that the child will be able thereby to build up for himself a sound and normal body and brain. On the other hand, if a woman neglects these plain rules of health and goes through her pregnancy repining or lamenting her condition, paying but slight attention to her own bodily functions, it is conceivable that the child may thereby be robbed of some of the nutrition he needs for his own best development. There can be little doubt that many puny, wailing babies did not get the right sort of nutrition during the prenatal period, and that their nervous condition is due simply to the lack of proper nourishment when the little body was beginning its growth.

# Give Your Children Milk—Use Milk Yourselves

A quart a day for every child, if possible, a pint without fail; a third of a quart of milk for each adult. Plenty of milk will help give all your children, big and little, the chance for health they ought to have. Buy more milk and your family will be better fed.

**Milk Helps Your Children to Grow.** Besides being a good all-round food, milk has something special, not found in many other foods, which children must have for their growth—they cannot grow without it. Give your boys and girls milk for their chance to grow.

**Milk Helps Your Children to Keep Well.** It will help you to keep well, too. Look at children who do not get milk, but get tea and coffee instead. Are not most of them pale and sickly? There are always very many sick children in cities and in countries where milk is scarce. When milk prices go up and mothers begin to economize on milk, more children become sick. Do not let your children run this risk. Give them clean, pure milk and help them to grow up strong and well and win in their fight against disease. Save on other things if you must, but not on milk, your child's best food.

**Milk Gives Your Chilren Lime** and other salts which they need. There must be plenty of lime in their food, for a great deal of it is needed for their bones and teeth and a little for their blood and all other parts of their bodies. Right food, not drugs, is what children need. Big boys and girls and grown people, as well as children, need lime, because the bones are constantly wearing away little by little and must be replaced.

**Milk Gives Your Children the Body-building Protein,** one of the materials from which their bodies are made. Milk is like eggs and meat in this. This body-building substance, the protein, of milk, is not new to you, for curd is milk protein. Cottage cheese is curd separated out from milk. When we drink milk or eat cheese, we give our bodies proteins which are changed and become part of our muscles, blood, and other parts of the body. The milk protein is good for everybody and especially good for children. They need a great deal of it, because their bodies grow so fast.

**Milk Gives Your Children Fuel** to burn in their bodies. They need the fuel to keep them warm and to help them run and play and work, much as an automobile needs gasoline or a steam engine needs coal. They are so active that they need more fuel for their size than grown people do. The fat and the milk sugar and part of the protein in the milk all burn up as fuel.

Milk is much cheaper fuel than meat. A quart gives the same amount of fuel as a whole pound of lean meat or as eight eggs. Think of the cost! Isn't the milk far the cheaper? Still less expensive fuel is a bowl of bread and milk or corn meal mush and milk.

**Skim Milk is Good Food.** It has the lime and protein and sugar of the whole milk. Use it, but use whole milk, too. Skim milk lacks fat and has not so much of the growth substances as has whole milk.

**Be Sure Your Milk is Clean and Fresh.** If you live in the city, buy it pasteurized from a clean dairy. In the country see that your cows and milkers are clean and healthy. Keep all milk cold and covered.

# Salads and Sandwiches

MRS. HARRIET NEWTON

## Orange, Cucumber and Cherry Salad

1 orange
½ cup cherries
½ cucumber
3 tablespoons cooked dressing

Slice orange and cucumber. Cut cherries in half, place 1 slice of orange upon a lettuce leaf, then a layer of sliced cucumber, then put cherry halves, cut side down, on cucumbers. Put a teaspoonful dressing in center and half a cherry on dressing.

## Celery, Cucumber and Cherry Salad

1 cup celery
1 cup cherries
2 tablespoons French dressing
1 cup cucumber

Cut celery crosswise. Cut cucumbers in cubes and cherries in quarters. Take a lettuce leaf, put a layer of cucumbers, a layer of cherries and a layer of celery, put French dressing over the top and place a half cherry, cut side down, in the center.

## Strawberry, Cottage Cheese and Sweet Green Pepper Salad

1 cup strawberries
4 slices green peppers
1 cup cottage cheese
3 tablespoons mayonnaise

Cut strawberries lengthwise. Cut peppers very fine. Mix with mayonnaise. Make a round ball the size of an egg. Put upon a lettuce leaf. Decorate with a teaspoonful of mayonnaise and whole strawberries.

## Stuffed Cherry Salad

½ box cherries
1 cup cottage cheese
2 tablespoons mayonnaise

Wash cherries and remove pits. Mix cheese and dressing and stuff cherries. Serve five or six stuffed cherries on a lettuce leaf.

## Cherries, Cabbage and Pineapple Salad

4 slices pineapple
1 cup cabbage
1 cup cherries
3 tablespoons mayonnaise

Cut cherries in quarters, cut pineapple in small pieces. Chop cabbage not too fine. Mix all with mayonnaise and serve upon a lettuce leaf.

## Pineapple, Banana and Strawberry Salad

3 slices fresh pineapple
1 cup strawberries
1 banana
2 tablespoons cream dressing

Cut pineapple fine, dice banana and cut strawberries lengthwise. Mix with cream dressing and serve upon a lettuce leaf.

## Banana, Apple and Cherry Salad

1 banana
1 cup cherries
1 small apple
3 tablespoons cooked dressing
½ cup celery

Dice the banana, cut apple fine, cut cherries in strips and cut celery crosswise. Mix well with dressing and serve upon a lettuce leaf.

## Banana and Cherry Salad

1 banana
½ cup celery
1 cup cherries
3 tablespoons mayonnaise

Peel banana and cut crescent shape. Wash cherries, remove pits and cut crescent shape. Wash celery and cut crosswise. Mix with mayonnaise and serve upon a lettuce leaf.

## Colewort Salad

2 c. chopped cabbage
1 large diced tomato
½ onion diced
1 pimento diced
2 cups chopped celery
mayonnaise

Mix all ingredients together and serve on lettuce leaf.

### Carrot, Celery and Apple Salad

1 cup carrots
½ cup celery
1 cup apple
3 tablespoons mayonnaise

Chop carrots fine. Cut celery crosswise. Cut apple in small cubes. Mix well with dressing and serve upon a lettuce leaf.

### Water Cress and Cottage Cheese Sandwich

1 bunch fresh water cress washed in several waters. Cut fine and mix with 2 cups of cottage cheese. Spread between buttered bread.

### Pineapple Sandwich

Take a fresh pineapple, peel and cut in very thin slices. Butter two thin slices of bread and place a thin slice of pineapple between them. Roll and tie with a narrow ribbon. Very attractive for teas.

### Strawberry and Cottage Cheese Sandwich

1 cup strawberries
1 cup cottage cheese

Crush strawberries and sweeten to suit your taste. Mix with cottage cheese, and spread between thin slices of buttered bread.

# New Recipes

FERN FERGUS

### Orange Bread

1 cake compressed yeast in ¼ cup warm water
1 cup orange juice
Grated rind 2 oranges
2 tbsp. sugar
2 tbsp. butter
1 tsp. salt
4 cups flour

Mix all the ingredients. Stir in flour and knead until smooth. Let rise to double its bulk. Divide and make into small loaves. Let rise again to nearly double its bulk. Bake one hour in moderate oven.

### Brown Bread

1 egg
½ c. molasses
1 tsp. soda
1 c. sweet milk
1½ c. graham flour
1½ c. wheat flour
Raisins
Salt

Beat egg, add molasses. Sift the graham flour, wheat flour and salt together, and add alternately with the milk. Dissolve the soda in a little hot water and add to the above mixture. Add raisins, dredged with a little of the flour. Bake in moderate oven.

### Potato Cornmeal Muffins

2 tbsp. fat
1 tbsp. sugar
1 well-beaten egg
1 c. milk
1 c. mashed potatoes
1 c. cornmeal
4 tsp. baking powder
1 tsp. salt

Mix in order given and bake 40 minutes in muffin tins.

### Almond Pudding

¾ cup roasted almonds
4 tablespoons butter
⅓ cup sugar
½ cup molasses
2 eggs
1½ cups flour
½ teaspoon soda
¼ teaspoon salt
¼ teaspoon cinnamon
½ cup milk
Whipped cream

Cream the butter and sugar together; then add the molasses and eggs, well beaten. Mix and sift the flour, soda, salt, and cinnamon together and add to above mixture, alternating with the milk. Beat well. Chop the almonds and fold into mixture. Turn into an oiled mold, cover and steam two and one-half hours. Serve with whipped cream.

### Oriental Fruit Cake

½ cup crisco
1 cup sugar
2 egg yolks
¾ tsp. almond extract
½ cup milk
Salt
2 cups flour
4 tsp. baking powder
¼ cup currants
¼ cup grated orange peel
⅓ cup chopped citron
2 egg whites

Cream the sugar and crisco, add beaten egg yolks, almond extract and salt. Sift baking powder with flour, add alternately with milk. Beat well. Fold in the orange peel, floured citron and currants, and beaten egg whites. Bake slowly.

# MEDICAL PROGRESS

## Digestibility of Wheat Bran

Bulletin No. 751 of the U. S. Department of Agriculture gives an account of experiments made for the purpose of determining the relative digestibility of fine wheat flour and graham flour. In summarizing the work of various investigators the writer, A. D. Holmes, tells us that "among the earlier studies of the nutritive value of wheat is a study by Rubner, who determined the digestibility of the protein present in three flours milled so as to contain 30 per cent, 70 per cent, and 100 per cent of the wheat kernel. He found that the protein of the 30 per cent flour was 79.3 per cent digested, the protein of the 70 per cent flour was 75.4 per cent digested, and the protein of the 100 per cent flour 69.5 per cent digested.

"It is sometimes contended that test periods of three or four days' duration are too short to give reliable data regarding the digestibility of foods. Newman and Robinson, who question the accuracy of results of digestion experiments of only three days' duration, studied the relative digestibility of white flour and whole meal (flour prepared from whole wheat kernel) breads of which 700 to 800 grams were eaten with 600 cubic centimeters of milk and 30 grams of butter fat daily for a period of two weeks. As a result of four experiments in which, with one exception, the protein of white flour was more completely digested, they found that on the average the protein of white flour was 89.3 per cent digested, while the protein of whole meal was 85.9 per cent digested. They also report that the digestibility of the protein of a certain wheat meal (92 per cent of the kernel) was 76.7 per cent as compared with a digestibilty of 80.4 per cent for the protein of another wheat meal (88 per cent of the wheat kernel).

"Experiments conducted by Hindhede to determine the relative digestibility of coarsely ground wheat as compared with ordinary white flour are not open to this criticism, since they were of seven months' duration. He found that the protein of coarsely ground wheat (bread) eaten with margarine was 75 per cent digested, while the protein of ordinary wheat flour eaten in a similar diet was 85 per cent digested. In both instances the total carbohydrate was found to be practically completely digested."

With reference to the digestibility of bran, we learn that "it is very generally believed that the difference in the digestibility of the protein and carbohydrate contained in graham flour and white flour is due to relative insolubility of bran cellulose in the human intestinal juices. That there is experimental evidence to substantiate such a theory is indicated by results of digestion experiments in which the crude fibre present in the foods and feces was studied.

"Prausnitz reports that the crude fiber of wheat bread is 53 per cent (52.6 per cent and 53.4 per cent) digested. This value, 53 per cent, is somewhat lower than the figures obtained by other investigators for the digestibility of the crude fiber of fruits and vegetables. In 30 digestion experiments conducted by Jaffa to determine the digestibility of common fruits and nuts, he found that on an average the crude fiber was 78.54 per cent digested. Constantinidi states that the crude fiber of potatoes is 79 per cent digested. As the result of two experiments, Weiske concludes that the crude fiber of a diet of celery, cabbage, and carrots is 55 per cent (63 per cent and 47 per cent) digested. Bryant and Milner report that the crude fiber of green corn is 60 per cent digested, that of potatoes 74 per cent, that of cabbage 77 per cent, that of beets 88 per cent, and that of apple sauce 95 per cent digested. As a rule, cellulose of fruits and vegetables seems to interfere with their digestion to a limited extent only.

"In grains, on the other hand, the cellulose forms the hard dry envelope, and is much more impervious to the action of the digestive juices."

In a new series of experiments bran alone was used instead of graham flour, and the following results obtained:

"An average of 465 grams of fine bran bread, equivalent to 155 grams of bran, and of 395 grams of coarse bran bread, equivalent to 132 grams bran, was eaten per man per day. The result of tests with fine bran indicate that the protein supplied by the bran was 44.7 per cent and the bran carbohydrate was 56.6 per cent digested, while the results of the tests with coarse bran indicate a digestibility of 28 per cent for the bran protein and 55.5 per cent for the bran carbohydrate. The result for the digestibility of fine bran protein is in agreement with the results of Pannwitz, who found that the protein of fine rye bran was 43.68 per cent digested.

"It is an interesting coincidence that the value of 75.8 per cent calculated for the digestibility of graham flour should agree so closely with the value, 76.9 per cent, obtained by averaging the results of the determination of the digestibility of protein of graham flour found in 26 digestion experiments.

"The coefficients of digestibility of the diet as a whole (37 per cent for protein, 88.5 per cent for fat, and 79.8 per cent for carbohydrate, in the series in which fine bran was eaten, and 35.8 per cent for protein, 93.1 per cent for fat, and 82.8 per cent for carbohydrate, in the series in which coarse bran was eaten), are lower than the coefficients of digestibility, 92 per cent for protein, 95 per cent for fat, and 97 per cent for carbohydrate, reported for the ordinary mixed diet. This indicates the way in which the rough, relatively indigestible bran influenced the digestibility of the entire diet. It is also possible that the bran stimulated peristaltic action to such an extent that the food materials were not as completely absorbed as is normally the case when they pass through the alimentary tract without increased peristalsis."

It is not to be forgotten, however, that digestibility is not the only property of food to be considered. Indigestibility is also a useful property. A certain amount of roughage is needed to carry off with necessary promptness the putrescible remnants of foods and excretory products and other alimentary residues. Experience shows that it is profitable to keep the colon free from putrefaction even at the loss of some small remnants of food materials left undigested, because of the quicker movement of the alimentary mass. Economy of vital energy and the conservation of the vital structures of the body are matters of far greater importance than the saving of small fractions of protein, fats and carbohydrates.

To tolerate constipation with all its evil effects through autointoxication is to strain at a tiny gnat of cheap food material and to swallow a prodigious camel of expensive disease and inefficiency. Complete health, comfort, efficiency and length of days are far more worthy of attainment than completeness of digestibility.

Finally, modern bacteriology has demonstrated that complete digestibility and absorption of the food principles is not desirable. The presence of carbohydrates in the colon is necessary to discourage putrefaction by promoting the growth of friendly acid-forming bacteria and the production of toxins by putrefactive organisms.

# New Treatment for Leprosy Apparently Successful

The United States Public Health Service has reports of what appears to be a cure for leprosy, it is announced by Surgeon General Hugh S. Cumming. Thus one of the world's most dreaded maladies, regarded as a hopeless and incurable scourge of humanity since early history, would seem to have been conquered by officers of the Public Health Service in the leper colony in the Hawaiian Islands.

For some years the belief has been gaining ground that leprosy could be cured, and encouraging progress has been made by several investigators. The starting point for this study was the observation that now and then the course of the disease appeared to be favorably influenced by treatment with Chaulmoogra oil. The treatment, however, was attended with many difficulties, and could not be carried out in all cases. At this point the Public Health Service enlisted the co-operation of Prof. L. E. Dean, head of the chemical department of the College of Hawaii, and president of that institution, suggesting that attempts be made either to isolate the active constituent of this drug, or to devise means for making its continued administration feasible. The latter has been accomplished by preparing what is known as an "theyl ester" from the Chaulmoogra oil. The treatment has been carried on at the Leprosy Investigation Station at Kalihi, Hawaii, the work being directed by Dr. J. T. McDonald, director of the station. The results of the treatment thus far have been so satisfactory that lepers come willingly for treatment, a recent inspection by Hawaiian health authorities failing to disclose a single secreted case of leprosy. Following a course of treatment, extending over about a year, 48 lepers, treated according to the new method, were paroled in October, 1919. Up to now they have remained free from the disease. At the present time the treatment has been administered only at the receiving station, but it is hoped to provide facilities for the treating of lepers in the leper colony at Molokai.

# The Rat Plague

Modern science has discovered the fact that the bubonic plague, the so-called "black death" which devastated Europe during the middle ages, is spread by means of rats. The rats contract the disease. The fleas which they always carry upon their bodies become infected. The same fleas, getting upon the bodies of human beings and biting them, inoculate them with the disease. This disease, which appeared in San Francisco a few years ago, has recently reappeared at several points, particularly New Orleans, Pensacola and Galveston. It is also active at Tampico and Vera Cruz, Mexico, having become epidemic in Vera Cruz.

There is no doubt that there is considerable danger of a broad invasion of our country by this horrible plague. In view of these facts, the United States Public Health Service has sent out an appeal to the general public as follows:

"Calling attention to the discovery of bubonic plague in several American and Mexican gulf ports, and renewing his warning regarding the introduction of the plague from Mediterranean ports which are known to be infected, Surgeon General Hugh S. Cumming today urged communities throughout the country, and especially along the coast, to inaugurate rat-extermination and rat-proofing campaigns.

" 'Bubonic plague is primarily a disease of rodents, especially rats,' said General Cumming, 'and the disease can be controlled effectively by measures directed against the rat. The extermination of rats is all the more to be desired because of the tremendous economic damage they cause.'

"According to conservative estimates made by the U. S. Public Health Service on the basis of numerous surveys, there is at least one rat for every person in the United States. This estimate coincides with that for Great Britain and Ireland, and with authoritative figures for Denmark, France and Germany. The annual upkeep per rodent was computed by the same authorities as $1.80 in Great Britain, $1.20 in Denmark, and $1.00 in France. The depredations of the rats in the United States will very probably exceed the estimate for Great Britain. One-half a cent a day is considered conservative, but even on this computation, it costs the United States $180,000,000 a year to support its rat population. This does not include mice.

" 'The U. S. Public Health Service is prepared to detail trained experts to assist communities in organizing the fight against rats,' said General Cumming. 'Many of our officers have had extensive practical experience in this work, and know how to make it really effective. In the seaport cities the work of extermination should be supplemented by bacteriological laboratory examinations to determine whether or not plague infection is present among the rodents.' In the inland cities this is not now necessary."

The U. S. Public Health Service has just published a new bulletin entitled, "The Rat: Arguments for Its Elimination and Methods for Its Destruction." Copies may be obtained by addressing the U. S. Public Health Service, Washington, D. C.

# Heart Disease Hereditary

An Italian physician, Galli, calls attention to the frequency with which disease of the heart and blood vessels occurs in particular families. In one instance he noted the occurrence of an attack of palpitation in the case of a man and two of his children. Several members of the same family are sometimes found to have hearts which are abnormally small, an inheritance from one or the other parent. In one family the hereditary disease of the heart and blood vessels was traceable through a number of generations. A great grandfather died of apoplexy; one of his sons died of the same disease at 64; two others died of heart disease at 51 and 70. Of the six grandchildren one died at 41 of heart disease; three others of apoplexy at 51, 46 and 45. Some of the great grandchildren show symptoms of disease of the heart and lungs.

## The Superiority of Malt Sugar

It has been experimentally determined (Hammond), in the feeding of infants, that an infant is able to oxidize 2.1 grams of lactose per kilogram of body weight, or practically one gram per pound. If the quantity is increased 50 per cent beyond this, 1½ grams per kilogram, sugar appears in the urine.

The same is true when cane sugar is fed; but in the case of malt sugar, more than three times as much sugar may be given before sugar appears in the urine.

In other words, malt sugar is utilized by the infant more than three times as well as is milk sugar or cane sugar.

## The South Sea Islanders are not Subject to Goiter

Dr. O'Day, of Honolulu, Hawaii, after some years of practice in the islands, states that he believes Hawaiians to be free from this disease. Other physicians who have practiced for years among the Polynesians of the South Sea Islands declare that they have "never encountered a single case of goiter among the natives." This fact is interesting, although we are still in the dark as regards the real cause of this disease. The form of goiter here referred to is that known as adenomatous or cystic goiter.

## The Effect of Prohibition on the Death-Rate

Dr. Hayden Emerson, who accomplished such marvelous results through the adoption of progressive sanitary measures while health officer of New York City, in a recent address before the Cleveland Academy of Medicine, said: "The beneficial results of the Federal Prohibition Amendment will exceed those of vaccination and smallpox or any other modern medical triumph over communicable disease. Partly as a sequence of the Prohibition Amendment and partly as a result of the influenza epidemic I believe we can now expect a new record of low death-rates for a series of years for the entire nation."

## Two Per Cent of the People Sick All the Time

According to Mr. Frankel, Vice-President of the Metropolitan Life Insurance Company, two per cent of the people of the United States are sick all the time, and probably not more than 25 per cent of the people who are sick receive anything like adequate medical treatment.

## Greens

Dr. McCollum, of Johns Hopkins University, and other investigators have by numerous experiments upon rats demonstrated the great importance of simple greens, many of which are commonly regarded as troublesome weeds. These humble plants are rich in iron, lime and particularly so in a special vitamin, the so-called fat-soluble growth-promoting vitamin, which is only scantily found in other foods with the exception of milk. The following list includes the names of the best greens:

Red root, pigweed, milkweed, purslane, narrow-leaved dock, cowslip, roquette, mustard, romaine, turnip tops, rainbow chard, witloof chicory, French endive.

Of course, there is some lime and iron found in other foodstuffs; so that if a person eats daily half the weight of greens required to furnish the total amount of lime and iron required, he will be fairly certain of securing the necessary amount of these necessary food elements.

Milk is rich in the fat soluble vitamin and food lime, but it contains almost no iron.

Everybody should have a fine patch of New Zealand spinach or Rocky Mountain spinach or "lamb's quarters" (pig-weed) growing in his back yard. Narrow-leaved dock and purslane are other excellent greens; also turnip tops and beet tops. Mustard greens are good for mixture with other greens; also French chard if eaten while the leaves are small and tender.

To produce a good crop of greens the soil must be well prepared, and the seeds should not be planted too thick.

# PUBLISHER'S LETTER BOX

## A Life Subscriber

FRANK S. HARMAN,
*Sacramento, Calif.*

"I have been a subscriber to GOOD HEALTH part of the time for more than thirty years. I value it so highly that I am now a life-time subscriber. I have an uncle who is more than seventy-five years of age, also my father is past eighty years of age, both of whom are very much interested in the teaching of GOOD HEALTH. I am a critic and can find fault with most theories but I cannot find any weak points in any of J. H. Kellogg's writings."

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"I have been a subscriber to GOOD HEALTH for four years, and it must certainly be a benefit to every one who reads it."

GOOD HEALTH

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## EDITORIAL DEPARTMENT

# The New Dietetics

A new science of dietetics has been developed within the last twenty years. As a result of the patient labors of many men, many mysteries have been cleared up; many hoary-headed theories have been exploded; and a great flood of light has been thrown upon one of the most important questions relating to human existence.

It is now possible to say with a considerable degree of certainty how much food is needed daily by a man, woman or child at rest or at work, and to indicate what particular foodstuffs are best suited to meet any dietetic need which may be indicated in any condition of health or disease. It is also possible to state with reference to most foodstuffs what is its value as a source of energy and what its special properties and characteristics.

In other words, there now exists a real science of dietetics, based on scientific facts worked out in laboratory researches, verified by animal feeding experiments and confirmed by clinical experience. Dietitics is no longer the jumbled mess of empirical notions of which it consisted even as late as two decades ago.

Thanks to the painstaking researches of Pavlov, Rubner, Atwater, Benedict, Chittenden, Mendel, Osborne, McCollum and other investigators perhaps equally worthy of mention, we now possess knowledge instead of assumptions, facts instead of fancies, scientific standards in place of time-honored sanctions.

There is perhaps no place in the world where the successive steps of scientific progress in the knowledge of nutrition and dietetics have been watched with greater care and interest than at the Battle Creek Sanitarium.

For more than forty years this institution has been a great clinical laboratory in which an intensive study of foodstuffs and their effects upon the human body has been continuously carried on by the writer and his associates. As new discoveries have been made in the physiologic laboratories of this country and Europe, the results have here been carefully scrutinized and tested in actual practice.

The columns of this journal, during the past forty-five years, have been a faithful record of this experience. There are among our readers those who have been witnesses of the progress which has been made even from the very beginning, and who have kept step with each advance. It is not to be presumed that perfection has yet been attained.

There is still much to be learned about human nutrition, but the rapid progress which is being made in these days affords good foundation for the hope that the advances within the next few years will be fully equal to those made in the past.

# The Value of Canned Foods

Before the days of canning, scurvy was an annual visitor in all parts of the temperate zone during the winter months, when fresh garden vegetables were unobtainable and the diet consisted chiefly of cereals, salt pork, corned beef, salted mackerel, codfish, halibut, herring and other smoked and salted foodstuffs. Practically the whole population suffered because the dietary was deficient in the alkaline salts and vitamins found in fresh vegetables. If it had not been for cabbage and the potato in those days, scurvy and other deficiency diseases would have been a veritable scourge.

The development of the canning industry has been an untold blessing to the people of this country and of others. It is now known through scientific research that fresh vegetables contain certain food essentials which are needed as much in the winter as in the summer; and these perishable foodstuffs must be preserved in some fashion. Drying deprives them of much of their value, as this method of preservation destroys some of the subtle vitamins which are needed to maintain the essential vital elements; and so the canning industry has become an essential part of our modern life.

Just now this great industry is seriously crippled, not only by a deficiency of raw materials,—cans, fresh fruit and vegetables, which are comparatively scarce and high in price, but also on account of the scarcity of labor.

Everybody should realize the importance of conserving food and promoting every industry which has for its purpose the production or saving of wholesome foodstuffs. Parents should encourage their children to spend their vacation weeks in gathering berries, wild or cultivated, picking larger fruit, and in every way possible helping to increase our food supply.

It is true that in certain instances deficiency diseases, such as beri-beri and scrofula, have been found to be due to a diet consisting too exclusively of canned food, but in these cases the diet consisted chiefly of canned meats or canned beans. Recent careful investigation of this subject at the University of Wisconsin has shown that tomatoes and other fruits are not materially deteriorated by the process of canning. The reason for this is that prolonged cooking at the high temperature which is necessary for the preservation of meats is not required for the preservation of fruits, which only need cooking at a boiling temperature for a few minutes, and so are not deteriorated by the process.

The most essential of all the vitamins is the antiscorbutic vitamin, the presence of which prevents scurvy. This is usually destroyed by the canning process, but in the case of the tomato and other fruits the heat required is not sufficient to destroy the vitamin.

Recent investigations have shown that tomato juice is nearly equal to orange juice as a means of preventing scurvy in bottle-fed children. It should be freely used unless orange juice is available.

Canned vegetables, fruits and greens, when fresh ones are not available, should enter more and more largely into the national dietary, and may well take the place to a considerable extent of cereal breakfast foods, which, while a great improvement over the old-fashioned fried potatoes and pork as a breakfast dish, are not the most ideal form of nourishment to maintain the best nutrition.

# Why We Thirst

The sensation of thirst is referred to the mouth and throat. Like hunger, thirst is primarily due to changes in the blood. The blood normally contains 78 per cent of water. This per cent is decreased by the addition of solids, such as chloride of sodium, sugar or the products of digestion. Water is demanded to restore the blood to its normal state. This nice balance between water solvent and solids in solution is maintained by an automatic mechanism, and thirst is the signal of the necessity for adjustment.

When water is absorbed into the blood, the excess is at once removed by the kidneys or skin. The volume of the blood, as well as its composition, is nicely regulated by an automatic organism. An intake of water promoted by the sensation of thirst is in due time followed by an output of water through the kidneys or skin. The solids contained in the perspiration or the urine represent the excess of the solids in the blood which give rise to the sensation of thirst. It thus appears that thirst plays a very important part in the automatic protection of the body, and is an instinctive means by which one of the most imperious of the body's requirements is brought to our attention.

It is a well known that thirst is induced by profuse perspiration resulting from exercise or exposure to heat, by the use of food containing considerable quantities of salt, and by the use of alcohol and various other drugs. Fever also creates a demand for water, which is now recognized to be essential as a means of aiding Nature in her efforts to bring about recovery, although less than a century ago the use of water was forbidden to fever patients. At the present time, however, water externally and internally, is recognized as, next to rest, the most important of all means of combating fever.

While it is possible for a person to drink even pure water in excess of his needs, and possibly to his actual injury, there is no doubt that the opposite fault is by far the more common. It is probable that the average individual would be very materially benefited by doubling the amount of his water intake; that is, water taken in the form of a beverage. Many persons drink only at meals, except perhaps during a few of the hottest weeks of summer.

Some persons, perhaps from the mistaken notion that drinking water at meals is a highly injurious practice, may restrict their water intake to so great an extent as to do themselves marked injury. Persons who suffer from autointoxication and whose tongues are usually thickly coated, are particularly likely to neglect water-drinking, greatly to their detriment. Such persons often do not experience the sensation of thirst except when a great loss of water occurs through vigorous perspiration.

The lack of appetite for food, very common in such cases, is very frequently accomcompanied by lack of thirst, even when the need of water is as great or even greater than the need of food. The absence of the thirst sensation may be due to a sort of paralysis of the thirst center, just as the lack of hunger may possibly result from a like failure of the hunger center. In such cases, the patient must be required to eat, even though he feels no desire for food, and in like manner he should be required to drink freely, even though the sensation of thirst is not experienced. Since it is very difficult in such cases to induce the patient to drink any considerable amount of water at a time, he should be asked to drink small quantities of water, from an ounce to three or four ounces, very frequently; an ounce every half hour, or three or four ounces every hour when not asleep, will not exceed the needs of the body.

# Dietetic Misinformation

The attention of the editor has been called by a correspondent to an article by Professor Porter and Dr. Bowers, entitled "Food Fads and Foolishness," published in *The Trained Nurse and Hospital Review* for December, 1919. Seldom has there appeared in print in a creditable publication anything containing so much misinformation as does this article, claiming to be from the pen of men specially qualified to speak on dietetic subjects.

First, the writers refer to green vegetables as being especially rich in protein, an idea that certainly will be new to those who are at all familiar with food chemistry. Green vegetables are, for the most part, poor in protein. The chief constituents of green vegetables are water, cellulose, and starch. Peas and beans, which are rich in protein, cannot properly be called green vegetables. The writers also mention rice as containing a large percentage of protein. This is certainly a gross error, for rice contains a notably small proportion of protein, but fortunately of an excellent character. They then go on to make the gratuitous statement, for the truth of which not the smallest evidence is offered, that to utilize the nutrient elements of rice "one must be born a Chinaman—with an ancestry whose alimentary apparatus has been trained for hundreds of years in the task of extracting nutriment from rice."

The truth is that, of all cereals, rice contains the smallest amount of protein. The protein constituent is, in fact, so small that, in the opinion of most authorities on dietetics, it is necessary to supplement a diet of rice with soy beans or some other legume in order to provide the necessary supply of protein.

## Fiction and Facts

After referring to the difficulty of extracting nourishment from rice, these writers remark by way of emphasis: "For the real test of a food is not its chemical formula, or its so-called caloric value, but its digestibility—its adaptability to the body requirements." Every investigator of the digestibility of rice, from the classical research of Beaumont a hundred years ago down to the latest study of the subject, has called attention to the remarkable readiness with which rice undergoes digestion. According to Beaumont, boiled rice leaves the stomach within an hour after it is swallowed. No other food, either animal or vegetable, occupies a shorter time in digestion.

Another astonishing statement is the following: "Vegetable foods also, by reason of their indigestibility, are much more prone to excite putrefactive fermentation in the intestinal canal—manifesting themselves in wind-storms of a more or less emotional nature, and in the undue irritation they may cause the mucous membrane in their passage through the alimentary tract."

In the light of the researches conducted by Dr. Tissier, of the Pasteur Institute, and Professor Torrey, of the Natural History Museum of New York, as well as other investigators, the above statement is exactly the opposite of the truth. No fact in the physiology of digestion has been more thoroughly established than that vegetable foods, as a class, are far less prone to putrefaction than animal foods, particularly meat and eggs. Vegetable foods ferment and form acids, while flesh foods undergo putrefaction, forming toxins and ptomaines. This is well shown in the difference between the stools of herbivorous and carnivorous animals. The bowel discharges of the horse and cow are only slightly offensive, while the fecal matters of the dog, cat, lion and other carnivorous animals are to the highest degree loathsome.

Again, our writers say: "Vegetable foods are much more difficult to digest, to absorb and to assimilate." An examination of the tables of Beaumont and other investigators of the time required for the digestion of various foodstuffs will show clearly enough that vegetable foods as a class are quite as easily digestible as are flesh foods as a class. For example, the average length of time required for the digestion of four common vegetable foodstuffs,—rice, potatoes, cabbage and corn,—is two hours and forty-six minutes; whereas the average time required for the digestion of five common flesh foods,—beef, mutton, pork, chicken and fish,—is three hours and forty-eight minutes—more than an hour in favor of vegetable foods. Mendel and his students have by careful research shown that even nuts, the most difficultly digestible of all vegetable foods, digest as quickly as meats, provided they are well enough masticated to give the digestive fluids ready access to each particle of food material.

By the process of digestion, animal and vegetable foodstuffs are prepared for absorption and are appropriated by the body with equal readiness. No authority and no scientific fact can be adduced that vegetable foodstuffs, after digestion, are absorbed and assimilated with greater difficulty than are animal foodstuffs. Hence the statement that these foods are less economical than animal foods is altogether gratuitous.

It is certainly surprising to find such reckless statements made by men claiming to speak with professional authority.

### Scientific Garbage

Again, we are told that "if we had four stomachs, and nothing else to do, we might get along on vegetable food almost as well as a cow. But lacking a hundred feet or more of intestines, and a large cecal pouch, a cud-chewing technic, and a few special ferments for the digestion of cellulose, we fare badly on a strictly vegetarian diet."

Here we are offered more scientific garbage of the most surprising sort. The natural inference from this statement is that all vegetable-eating animals must be possessed of four stomachs and a hundred feet or more of intestines, with a cud-chewing mechanism and a large cecal pouch, and that any animal not possessing these requisites "is likely to fare badly on a strictly vegetable diet." These writers seem to be wholly unaware of the fact that the horse with its simple stomach like that of man, and an alimentary canal only one-third longer than that of human beings, and less than half the length of that of the sheep, thrives on a strictly vegetable diet, and on a raw, coarse bill of fare has acquired the distinction of being the finest of all the domestic animals which man possesses, and is noted as being one of the fleetest, most enduring, and useful of all animals. These authorities seem also to be ignorant of the fact that two hundred millions of Hindus, almost countless millions of Chinese and other Orientals have subsisted for many thousands of years on a diet from which flesh foods are almost totally excluded; also that there are many thousands of intelligent civilized human beings in this country and Europe who have chosen to exclude flesh foods from their bill of fare, and find no difficulty in digesting, with one stomach and an intestine of moderate length, all the nutriment they require for complete nutrition. And besides human beings there are millions of chimpanzees, gibbons, orang-outangs and gorillas living in tropic forests who likewise subsist upon a diet almost exclusively vegetable in character, besides billions of rabbits, guinea pigs, and others animals with simple stomachs.

We are exhorted to "remember that even bread requires five times as much pepsin as meat, and that the chief repair of the body structure comes from the albumen, so difficult to extract from vegetable foods."

The doctrine that vegetable protein is more difficult to digest than is animal protein has been entirely exploded by the recent researches of Mendel and Cajori. It is not true that bread requires five times as much pepsin as does an equal weight of meat for its digestion. We challenge the professor to present the scientific proof of this reckless statement.

Again, we are told "the indigestibility of vegetable foods, and the large amount of fecal matter they produce, while they may have a tendency to loosen the bowels, are always a source of danger."

These misguided teachers explain that vegetable foods are a source of danger, "first, because they carry quantities of incompletely digested food out of the system—thereby robbing the individual of a large part of his nutriment; and second, because of their likelihood to produce irritation, resulting in intestinal catarrh."

## Absurd Theories

Both these statements are ridiculously absurd. The amount of undigested food carried out of the body is by no means "a large part" of the amount taken. At most, it is not likely to be more than 10 or 12 per cent of the protein and a much smaller percentage of the starch and fat; and for this loss ample compensation is given in the increased amount of lime, vitamins and necessary cellulose which the vegetable products provide. As regards the "irritation" produced by vegetable foodstuffs, this is an ancient bogey which all modern teachers of dietetics recognize as having no force as an objection against the use of vegetable foods. Von Noorden and other eminent authorities have for years been recommending vegetable foods, even of the coarsest character, as the most appropriate diet for colitis or intestinal catarrh, and the most efficient means of curing this condition. The editor has for many years followed such regimen in his practice, and with most excellent results, which certainly could not have been obtained if vegetable foods were irritating in character. The laxative effects of these foods are not due to irritation but to physiologic stimulation, which is induced in part by the stretching of the intestinal muscles and in part by a contact impression or titillation such as tends to keep the tongue and cheek muscles active as long as a foreign body of any sort is in the mouth.

### Unfounded Statements

But perhaps the most astonishing statement of all is the following:

"Also, the excessive amount of sugar in the vegetarian diet is prone to undergo fermentative changes, causing more irritation, and still further favoring the development of putrefactive fermentation."

The idea that sugar encourages putrefactive fermentation is certainly original with Professor Porter and Dr. Bowers, but it is unfortunately absolutely without foundation. Sugar is a preservative; it prevents putrefaction. Dilute solutions of sugar undergo fermentation but cannot undergo putrefaction, for which protein is required. The most efficient means thus far discovered of suppressing putrefactive changes in the intestine is the administration of large doses of sugar. Professor Torrey, of New York, and Professor Rettger, of New Haven, as well as Metchnikoff, Tissier, and Kendall, long ago showed that sugar suppresses intestinal putrefaction. Torrey and Rettger found that small doses of milk sugar given to rats would, in a few days, entirely suppress all putrefactive changes in the intestines. Nine or ten ounces of sugar, taken in three doses by an adult, will usually effect a complete change of his flora, suppressing the putrefactive bacteria within four to six days.

Further, these writers tell us, "All the cane sugar of vegetables has to be converted into glucose before it can be absorbed, which is an excessive tax upon the digestive energy." The amount of cane sugar contained in vegetable foods is very small, averaging not more than two or three per cent at the most, usually less than this amount. The digestive change required is one that consumes so little energy that it has been very difficult to determine whether any at all is used, although it is well known that a very large expenditure of energy does occur in the digestion of protein, the chief constituent of lean meat—much more than in the digestion of any other foodstuff.

### Vague and Incorrect Ideas

Our writers say again, "Of course, provided one does not die from the experiment in the interim, the system can ultimately become accustomed to utilize vegetable foods." They seem to be wholly unaware of the fact that man is a primate, and by virtue of this fact is naturally adapted to a non-flesh diet, as are his relatives of the primate family, the chimpanzee, the orang, and the gorilla. He does not have to acquire an adaptability to the vegetable regimen. It is his natural, his normal, diet, and he takes to it as readily as a duck to water. The appetite for flesh food is an acquired one, while bread, fresh vegetables, fruits, nuts, and milk, are well relished by the young and unsophisticated human being as they are well adapted to his nourishment.

These writers next refer to fruits as "one of the chiefest sources of all danger," a most astonishing statement. The suggestion is even made that drug laxatives are preferable to the free use of grapes for laxative effect, the intimation being that the acids of grapes are likely to reduce the alkalinity of the blood, while the fact is that the effect of a fruit regimen is to increase the alkalinity of the blood rather than to diminish it.

Another wrong statement is that the use of sour milk, the bacillus Bulgaricus and other acid-forming germs, while it will "lessen the number of bacterial flora in the upper intestine," is, nevertheless, of doubtful value. These writers seem to have a vague and incorrect idea of what the intestinal flora is and what it is for. The purpose of administering acid-forming bacteria is not to "lessen the number of bacterial flora" but to change the flora. Friendly bacteria do no harm in the intestine; on the contrary, they render valuable service, but the wild, unfriendly meat bacteria, to which Herter has called attention, are productive of much mischief by causing putrefaction in the colon and resulting intestinal toxemia.

It is certainly no exaggeration to say that Messrs. Porter and Bowers have introduced about as many errors into their article as the space occupied would permit. Although it contains very little information about "food fads," it does contain a vast amount of nonsense of the most surprising and inexcusable character.

# Non-Flesh Eaters Strongest of All Animals

Tibbles, an English author on diet, in discussing the question of vegetarianism, says:

"No vegetarian animal can lift the weight of his own body, not even the horse, ox, camel, or elephant. On the other hand, the carnivorous lion, gripping a calf his own weight, can jump a hurdle six feet high. The lifting power of man, *the mixed feeder*, exceeds that of any other mammal. It is recorded of Louis Cyr that he lifted 2,672 pounds; of Little that he carried 1,560 pounds for fifteen steps; of a Tyrolese that in six hours he carried a load weighing 262 pounds up an ascent 5,600 feet high. A laborer, weighing 165 pounds, working on the docks, will many times a day carry a sack weighing 220 pounds."

Two important points are overlooked by the distinguished author. First, while it is true that many men are "mixed feeders," this is not true of all men, and there are plenty of examples of vegetarians who are remarkable for their prodigious strength. Among others, the Smyrna porters, who live almost wholly on figs and bread, rarely or never tasting meat, are able to lift enormous weights, sometimes carrying upon their shoulders loads of 800 or a thousand pounds.

It is evident, also, that our author had in mind herbivorous animals rather than vegetarian animals in the statement that "no vegetarian animal can lift the weight of his own body." The chimpanzee, the orang-utan, and all the anthropoids are often seen swinging from limb to limb with body suspended in mid-air by one arm only. They are not only able to lift the weight of their own bodies but are able to leap through the air very considerable distances; and the gorilla is a veritable prodigy of strength.

If man has a lifting power greater than that of any other flesh-eating mammal, which may be inferred to be the writer's belief, he is far outdone by the gorilla, a vegetarian animal which possesses at least twice the strength of a man. The horse, an animal which lives upon the very coarsest products of the vegetable world, can not only lift the weight of his own body, but with the added weight of a heavy man upon his back, can make prodigious leaps over fences, ditches and other obstacles.

Then there are the vegetarian birds, which perform prodigious feats in long-distance flights.

Carnivorous animals are notably lacking in endurance. Roosevelt declared that a horse with a heavy man on his back will run down a lion in a mile or two.

Writers on dietetics have, indeed, made a very poor showing in their attempts to demonstrate the inadequacy of a non-flesh dietary. The wiser ones have in recent years wholly abandoned the attempt, and now agree that meat is not an essential of man's dietary.

J. H. Kellogg

# Public Health Education in China

Through the courtesy of the editor of the *American Journal of Public Health,* we are permitted to present to our readers the following interesting account of the ingenious methods devised by Dr. W. W. Peter for teaching modern ideas of hygiene and sanitation to the Chinese, together with the accompanying illustrations:

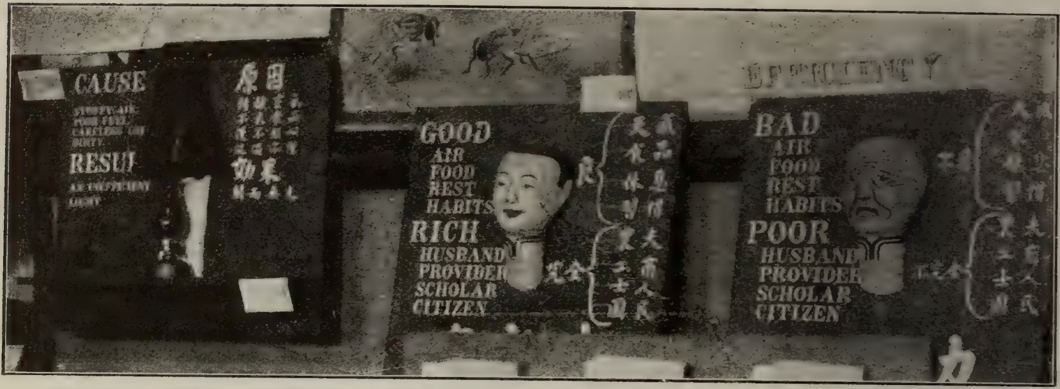
"In China the toy persists, and Dr. Peter has made of it a spectacular illustrator of mortality rates. On one side of a Jacob's ladder the slats bear the name in Chinese characters, 'America,' 'Europe,' 'India' or 'China;' and on the opposite side, on each slat, one skull, typifying one death. Before an Oriental company the toy is held aloft and the legend tells of a country; with a turn of the wrist it is reversed, and with a clatter the skulls appear. For America there are fourteen slats and fourteen skulls; every one in the audience can count them, a mortality rate of fourteen per thousand. India, with its longer ladder, tallies thirty-five; while China, with still greater showing of skulls, rattles down to forty.

"This is a striking illustration, which needs no mathematics; the short tally of skulls and the long one—so long that the lecturer must mount upon a box to keep it clear of the ground. How excellent a study in psychology is this appealing by a toy to the 'child-like' Chinese, as Bret Harte has characterized him! And the question follows, 'Why?' You are proud of your China, but here is this. Why is it?'

"Various illustrations in demography employ tables, ordinary Chinese living-room tables. By some necromancy little wooden men are pushed up through trapdoors by secret springs, in combinations and in the twinkling of an eye. The Orientals love the magician. Here is a table that counts; it can tell its story in density of population. It is not unusual for a spectator to say that these statistics are all very well, but it is foolish to compare countries like America or the nations of Europe, with forty or fifty or one hundred millions only, with thickly settled China and its five hundred millions. 'Let us see what the tables tell,' says the lecturer, and behold, for England forty dolls, representing forty persons to the square, jump with a common impulse into view. For India there are twenty, for little Holland, fifty-three, and for Belgium before the war, seventy-three. Then comes China's turn, and from its own decorated table top there rise eleven little wooden Chinese figures. The thickly settled provinces show twenty-three. 'But, how about Shantung, with its many millions?' and out come fifty-nine puppets to tell the story. It is thus that the auditors express their interest and help the speaker, who ranges the seventy-three Belgians against the eleven little Chinamen and says, 'In Belgium, the most thickly populated country on the earth, public health has done things.'

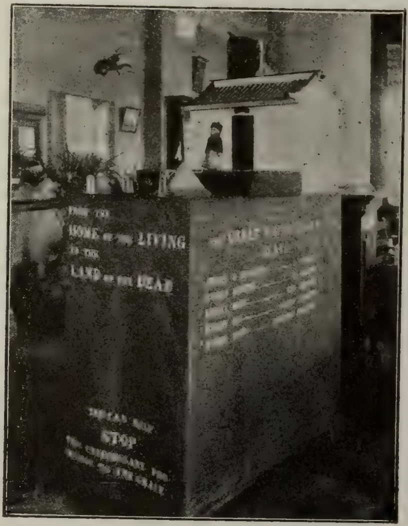
"The doll or manikin appeals to the older Chinese as it does to our children. Here is one dressed in conventional fashion. It is weak and shrunken, its head droops on its chest and is withal flat and flabby; it is the sick China of now. Let us apply therapy, and the figure straightens itself up; let us furnish education, and the shrunken head of the figure through the magic influence of compressed air judiciously used, expands; let us apply moral training, and the gleams of intelligence and rectitude shine out through the figure's eyes.

"Still another figure, a manikin, again sick China, is bending under his burdens, for he has heavy packs. These are tuber-



Health Posters in English and Chinese

culosis, cholera, plague, and other preventable maladies. The greatest burden of all is lifted from him and he straightens up a bit—the pack is unrolled—it is tuberculosis; and as the assistants lift it to carry it out back through the flowing curtains, the people read the name. One after another the packs are lifted and the manikin is more and more erect. With great ceremony they are unrolled and the boxes held so that the names are read before they disappear. 'Now, would you see magnificent China when it has put these preventable diseases under its feet?' queries Dr. Peter; and with the murmurs of assent the silken curtains part, and there on the pyramid of conquered diseases stands the most perfect specimen of manhood in the city, usually the physical director of the local Y. M. C. A. gymnasium and over him waves the flag of China. 'Is this a picture of what China might be, or am I wrong?'



Model of Unsanitary Home

"A variant is the race of the nations, with the stage for a track. Some one familiar to the company, perhaps a beggar from the street corner, impersonates China. He is loaded with the burdens of disease. America is there, with its proportionate burden, and France and Japan. Most of the company have never seen a race. The lecturer dramatically draws with chalk the starting line and arranges the tape at the finish. It is done openly and with much ceremony. There is interest and excitement attending every movement. He lines up the men, he tells them what they must do, how they must start; he explains his count, 'one, two, three, go,' and he counts again for the real start with the excitement of the audience at a maximum. Of course China comes in last, and there is no need to explain to the company the reason.

"Then there are the automatic graphic diagrams, where by themselves the lines unroll to their proper place, a quiet bit of mystery. This one shows the percentage of educated people in the countries. The lecturer cries, 'America,' and a great length of ribbon flows up and forms one of those columns that statisticians love to juggle with; England and the countries of Europe unroll themselves and make a goodly showing.

"'And now, China,' says the lecturer. China starts; it is slow; it creeps along a little way; it stops. 'The machine is broken,' mutters one of the spectators, and the lecturer sadly shakes his head while another auditor speaks, 'It is true, we are at fault. We must make our nation strong with schools.'

"The outfit that Dr. Peter took with him in his journeys to lecture through China and which is in use by Dr. Woo, forms to Western eyes a quaint procession. There are five of the big wheelbarrows that carry altogether two and one-half tons of stage fittings and apparatus.

"These five great barrows with their enigmatical loads excite as much attention in a Chinese city as the circus elephant does here in a country town. The platform of the auditorium has a mystical look. There are curtains that hide things, there are queer devices, some of them familiar to Americans,—the bell that clangs for every death from tuberculosis, the clock-face that registers the total, and the figures in their endless procession to the grave. There are busy little workers toiling in turning wheels; they accomplish nothing, for they work alone; there is another group working in harmony, which revolve great China by the correlated efforts. Pyramids are built on the stage, always with deliberation and ceremony. Their elements have in them the contacts for an electric light. The capstone is lettered, 'National Health;' the lower stones bear legends, 'Money,' 'Good Laws,' Education' and at the bottom, the largest and most important, 'Public Opinion.' When that is in place the light shines forth. Then there are chains with strong links and weak links.

"Every item is psychologically fitted for Chinese appreciation; and with this array, helped by men who turn the Jacob's ladders or remove the packs from China's back or draw aside the curtains, Dr. Peter addresses his auditors and finds his way to their intelligence. 'An American,' they say, 'but with a Chinese heart.' And in this way he has stood before 110,000 of China's best citizens, telling them in language that they can never forget the simple principles of good health.

"Every factor is focused to its work, and so cunningly and so picturesquely withal that could a good theatre manager once get hands on the outfit he would never let it get off his circuit. Not only has the platform the charm of that of the necromancer, bright with silken banners, inscriptions in Chinese and English, masking curtains, half-drawn, yet concealing something which presently produces some surprising effects, but the meetings have been planned with all the care of a social function. The city authorities are invited to form a committee, they are notified that there can be only three meetings a day for the six days, and those who do not come will lose the opportunity. Local authorities give the schools a holiday in which to attend the lecture, and admission is strictly by ticket. Thus it is that crowded houses have followed Dr. Peter everywhere."

# Primitive Cookery

Although the modern pastry cook shows no small amount of artistic talent in preparing her wares, she falls far behind the native Indian women in the dexterity with which she manipulates her materials.

Some thirty years ago, the writer had an opportunity to witness the preparation of an evening meal in the Indian camp at old Fort Yuma, which was at that time occupied by the last group of American Indians still living in the primitive simplicity of ancient aboriginal times.

Major J. W. Powell, in his exploration of the Colorado River, had evidently visited the same tribe and witnessed the same culinary preparations, which he thus admirably describes in his report:

"For this purpose they have large conical baskets, which hold two or more bushels. The women carry them on their backs, suspended from their foreheads by broad straps; and with a smaller one in the left hand, and a willow-woven fan in the right, they walk among the grasses, and sweep the seed into the smaller basket, which is emptied, now and then, into the larger, until it is full of seeds and chaff; then they winnow out the chaff and roast the seeds. They roast these curiously; they put the seeds, with a quantity of red-hot coals, into a willow tray, and, by rapidly and dexterously shaking and tossing them, keep the coals aglow, and the seeds and tray from burning. As if by magic, so skilled are the crones in this work, that they roll the seeds to one side of the tray, as they are roasted, and the coals to the other. Then they grind the seeds into a fine flour and make it into cakes and mush. It is a merry sight, sometimes, to see the women grinding at the mill. For a mill, they use a large flat rock, lying on the ground, and another small cylindrical one in their hands. They sit prone on the ground, hold the large flat rock between the feet and legs, then fill their laps with seeds, making a hopper to the mill with their dusky legs, and grind by pushing the seeds across the larger rock, where it drops into a tray. I have seen a group of women grinding together, keeping time to a chant, or gossiping and chatting, while the younger lassies would jest and chatter, and make the pine woods merry with their laughter."

# The Value of Adult Recreation

[Reprinted from the June-July 1920, issue of *Public Health,* Michigan Department of Health.]

Today in America we have more leisure than we have proved ourselves able to use well, and more people are constantly getting more leisure. The problem of the 20th century is the utilization of this leisure time. We are realizing the disastrous results of the improper use of leisure time and also the enormous benefits to be gained in individual development, in industrial efficiency and in democracy itself by providing wholesome recreation in our communities. Already there is a change in our attitude toward play. Formerly it was considered something permissable which might be indulged in occasionally within certain limits, but now it is beginning to be taken seriously and considered a primary human need.

Broadly speaking, recreation is considered as that which takes place when we are free to choose the activities in which we want to engage. It is not relaxation or rest in the sense of idleness, but activity directed in some refreshing channel. The most satisfying recreation is often an avocation into which we put a great deal of energy. However, recreation is not simply a change of activity, but rather an experience to satisfy natural tendencies which do not find an outlet in our daily occupations. True recreation provides recuperation from over-work, preservation of health, development of character, and opportunities for education frequently denied in youth.

## The Difference Between Amusement and Recreation

The distinction between amusement and recreation should be clearly understood.

In order to receive the proper benefits from leisure time activities, we must participate in these activities ourselves and not be mere spectators of games played by others. The present mania for prize fights, football, and professional baseball shows the tendency of recreation to become passive. We are amused by the theater, vaudeville, and moving picture shows, but it would be better for us if we could engage in active games and sports. For some types of workers whose occupations keep both minds and bodies active during the day, passive recreation may be most beneficial, but the majority of people who work under other people's direction all day need in the evening something more than passive amusement which requires nothing but reception on their part.

As the eight-hour working day becomes more universal and the amount of leisure time is proportionately greater, the dangers as well as the benefits of the leisure period increase. The evils which may come from periods of "nothing to do" are many. Lack of proper resources for the use of leisure time is responsible for much immorality. The police court, jail, asylum and juvenile court are witnesses of the effect of unplanned leisure on individuals whose natural hunger for recreation has not been satisfied in a wholesome way. Unless the normal demand for excitement after hours spent in monotonous work is satisfied by activities which will be health-promoting and character-developing, pursuits will be followed which are not recreative in the true sense, but rather time killers, the results of which are often bad habits, delinquency and crime.

### "Crime of this Age Is the Waste of Leisure Time"

While the positive evils of an aimless leisure period are many, the negative evils are even greater. We Americans have proved ourselves most efficient and resourceful workers, but in our zeal for developing great industries and accumulating great wealth we have forgotten how to play. Mechanical work is deadening to the play spirit. Those who go to work at the age of 14 to 16 years and are kept at monotonous occupations lose their spontaneous spirit and even lose their desire for play, and their only recreative resources are passive amusements such as motoring and the "movies." The millionaire as well as the factory worker has lost the art of recreation. He shows his realization of the difficulty as well as his ignorance of the remedy in his attempt to purchase some other person's expression of an interest which he has neglected in himself. He spends millions on a picture or other specimens of art or music, trying to satisfy his own desire for self-expression through the self-expression of someone else. The danger of postponing our *life* in our devotion to the *means* of *living* is serious, and the result is that we really never live at all. The realization of our lack of vividness, of responsiveness and even of our capacity for joy comes when it is too late to change the habits of a lifetime. The lesiure period is the time for developing our native power and genius, it is the time for the pursuit of our ideals. Someone has said, "The crime of this age is the waste of leisure time." If individuals are going to waste opportunities for education, for self-development, and for vitality-producing activities, and if communities are not going to offer them facilities for enjoying these activities, then the progress of the whole country will be retarded by this arrested development.

The most obvious value of recreation to the individual is that it provides an opportunity for the preservation of health. Physical activities are essential, especially for persons whose daily occupations keep them indoors. Public recreational facilities are usually provided today because of their health-giving qualities. While this argument is sound and proper, recreation does make for better physical development through outdoor and indoor sports and games; still this is only one phase of the value of recreation. Character development and educational training are equally as important results of a recreation system.

## Development of Inactive Faculties

The leisure time period contributes most to the development of the individual. It has been said, "What we earn while at work we put into our pockets, and what we spend during our leisure time we put into our character." Our occupations are tending to become more and more specialized and one-sided. So much of the time we are using only one part of our body or mind, allowing the other parts to deteriorate through disuse. There is great need therefore for our leisure-time activities to provide opportunities for developing those faculties which remain inactive during the working period and thus build a more all-round individual. Active recreation, such as sports, games, dramatics and singing, develops powers of self-expression, of individuality, of initiative, and of decision which many occupations tend to stifle. They provide a beneficial outlet for our natural demand for play and help to form certain desirable habits of perseverance, pluck, quick thinking, self-restraint and cooperation. Fair play learned in games makes it easier to live a clean, courageous, and generous life. Group activities also render service to the individual by promoting his happiness and decreasing his loneliness.

Although recreation should not be sought primarily for its educational value, still the opportunities for learning are many and often answer the most insistent need of the individual. Of course much general knowledge is absorbed simply by mingling with people, and through lectures, concerts and other entertainments, but clubs and classes organized for study provide recreation for persons engaged in daily occupations requiring monotonous physical labor. Leisure is the time to follow our avocation. This is the time in which to take up some subject which we were not able to study in youth. Leisure time gives us an opportunity to study music and art or to use such talent and ability along these lines, such as playing some musical instrument, singing, dancing, debating or taking part in dramatics. In social centers every one is urged to engage actively in something. Some one has said that most of us waste enough leisure time to make ourselves musicians, artists, scholars or poets and in this way deprive ourselves of the most complete development, and our communities of the benefits of our talents.

The benefits which the individual receives from wholesome recreation not only make him better able to live more effectively but to work more efficiently. "You do just as much work in the world being happy as you do being miserable—only you do it quicker." Employers are realizing the truth of this statement and are providing their employees more and more with facilities for recreation as well as with more leisure. Athletic fields, tennis courts, swimming pools, lecture courses, glee clubs, orchestras and dramatic societies have found their way into the organization of almost every large factory, not because of the philanthropic ideas of the manager but for the sake of greater efficiency in production. Physical exercise produces vitality, energy and resistance against disease. Something to look forward to after a day's work whether it is a lecture, a ball game or swim, will make a more enthusiastic worker. The ordinary factory worker who must be constantly practising economy has few facilities for a good time, and he requires something to counteract the monotony of the day's work, or the result is worn-out nerves and misery for the individual, and accidents, delay, and disorder for the factory.

If there is any doubt in regard to the

value of recreation to industry, an investigation of the amount of time and expense organizations unhesitatingly put into providing facilities for recreation will be a convincing proof that recreation pays. There is no question that the recreation movement has a most vital connection with that of American skill, efficiency, and ingenuity which we believe to be a part of our industrialism.

### The Value of Recreation

The fundamental value of recreation is the development of men and women who are able to take their places in society and fulfill the requirements which society demands of them. As we have shown, it gives increasing physical strength, stronger moral character, a larger variety of interests and accomplishments and greater industrial efficiency. Games teach the subordination of the individual to the common good and develop the spirit of cooperation. Learning to keep the rules of the game trains the citizen in obeying laws. Recreation fits men and women to become more useful and loyal citizens by developing a more all-round individual. More important than this is the fact that recreation fits people for a larger degree of democracy. We used to talk about doing things *for* others, but the present idea is doing things *with* others. The great significance of the value of recreation is that it teaches people to play together, and thus to live together harmoniously and effectively. The most striking characteristic of the present time is that people are doing more things together. We are coming together for municipal movements, national purposes, labor unions and in associations of employers and employees. Recreation is an agency which has the qualities to prepare those people who are not yet ready for it, to take their part in the great unity which is already developing in the country. Farmers who have always gloried in their independence can be made to understand the value of co-operation and organized effort, through recreation. Foreign-born citizens can most easily be made to feel that they belong to a community by taking part in a community recreation program. Democracy will be assured when we have a successful recreation system in our communities; for when people talk together, sing together, and play together, the ideals of brotherhood are being realized.

# For Your Health—Make a Garden

R. V. ASHLEY

## Sixth Article

"September my name is,
And mighty my fame is,
For everywhere over the land
I make myself merry
With nut and with berry,
Preparing them all for your hand."

September is principally a harvest month. It is then that the fruits of our labor are manifest. And if we have planned our garden well and planted it in order, and tended it assiduously, we shall find in the harvest the full realization of our early visions of garden good things.

If the garden has been properly groomed throughout the season, there will be no weeds in evidence, no plants out of place, no blank spaces in the rows; but something of value as food or as filling will occupy every square foot of space.

During the first few days of September we may make sowings of a number of things on the chance of a late fall. Corn salad planted now will furnish early greens for spring. It should be protected before freezing weather with a covering of dry leaves or straw. This is a salad plant little known in America but largely used in Europe. With slight protection, as suggested, it can be harvested all winter from the open ground, even under a heavy covering of snow. It grows somewhat like a loose-leaved lettuce, the leaves being somewhat smaller than those of Grand Rapids lettuce. The individual leaves are pulled and served as salad, either by themselves or in combination with other salad materials. It is good also as pot greens.

If your bumps of curiosity and of daring are well developed, plant a few beans of the refugee varieties. If the weather man is kind, you will enjoy snap beans weeks after the early plantings are gone; and if they should be caught by frost, your loss is nominal.

For lettuce sow Little Gem, black seeded Mammoth Butter, and Big Boston. Little Gem should mature fine heads in the open, but Big Boston, sown in September, should be transplanted to the cold frame to furnish winter heads. However, in a favorable season, the heads out of doors may be eatable until New Years, though of course, such lettuce is not quite as sweet and tender as that grown under glass.

Make a sowing of Little Marvel peas. These, by the way, are among the most delicious and productive of the dwarf varieties and in an average fall are sure to yield a good crop before freezing weather from September sowings.

Scarlet Button and French Breakfast radishes should be sown now for late fall cropping.

Viroflay is the best all round sort of spinach for early spring and late fall sowings. It should be thinned first to six inches, then to ten inches in the row. The thinnings, of course, make the sweetest and tenderest of greens. Later, the outer leaves only should be used. If covered with dry straw it is possible to use this spinach all winter, even when covered with snow.

If you planted New Zealand spinach in July, you will have a continuous supply of this succulent "green" until freezing weather.

All sorts of turnips may be sown now with the expectation of obtaining good crops.

Sow vacant ground with winter rye or quick-sprouting seeds of vegetables which you have left over, to be turned under just before freezing weather, or early in the spring. This makes the very best kind of garden fertilizer.

Winter celery should be banked up in September, as it must be blanched before it goes into the cellar. When cabbage becomes full grown, check its further growth by bending the heads over, first one side, then the other. This will also prevent the heads from splitting.

When a crop is finished, either by harvesting or by frost, the top growth should all be removed from the ground, and those likely to harbor insects or disease should be burned. The rest may be added to the compost heap, or turned under where they are.

Sweet corn, peas, beans, beets and carrots sown in July should now be in their prime. If you would do well all the garden work that may be done this month, you may save yourself two weeks' time in the spring when so many things simultaneously demand attention.

In the flower garden, September brings three superlative opportunities in the planting of Dutch bulbs and lilies, of peonies, and of German iris.

In buying bulbs, concentrate on those that will give the most for the money. These are tulips, daffodils, and crocuses for outdoor bloom, and for indoor bloom, tulips, hyacinths and narcissi. These bulbs are comparatively heavy and in quantity usually travel by express. Among the smaller bulbs which may come by mail in quantity are Ixia, Sparaxis, Babiana, Snowdrops, Galanthus, and Chionodoxa.

To try to tell even briefly what the average gardener should know with reference to the September planting of bulbs, peonies and irises within the space available for this article, constitutes an ambitious, not to say a presumptive, undertaking. It would almost be easier to write several volumes dealing with the history and the literature as well as the characteristics of the numerous named varieties and the approved methods of planting. We can attempt only to describe with painful brevity a very few of the choicest varieties and of the simple methods of planting which any flower lover may employ.

## Spring Flowering Bulbs for Fall Planting

These include the tulips in variety, hyacinths, narcissi, crocus, bulbous irises, Galanthus, Leucojum, Muscari, Scilla and Chionodoxa.

Spring-flowering bulbs as a class are general favorites with flower lovers. The ease with which they may be grown and the fact that they come into bloom with the passing of winter lends to their gay colors an irresistible attraction. There is a modest charm about the snowdrops and crocuses, but the spring display becomes really gorgeous with the blooming of the hyacinths, tulips and daffodils.

With a little extra forethought and preparation much of the beauty of this display may be had within doors during the coldest and bleakest portion of the northern winter.

These bulbs generally should be planted as soon as they are received from the dealers or growers. Tulips are the one exception. Narcissi and crocuses especially should be planted by the first of September, as both are very impatient of longer delay. However, it is frequently October before the new bulbs arrive, and they should be gotten in the ground with all haste. Tulips, however, may well wait until the latter half of October before planting, as otherwise they will immediately start into growth, and may be easily ruined for spring bloom.

If your soil produces good vegetables and flowers, it should be well suited for bulbs. In the case of daffodils and other bulbs which are to remain in the ground for several years, the soil should be a rich, deep, friable loam and enriched with bone meal or commercial fertilizer, unless thoroughly rotted stable litter is available.

In planting the bulbs excavate the top soil to the required depth, see that the soil underneath is in a thoroughly loose condition, and then put in a one-inch layer of sharp sand. Set the bulbs at proper distances apart in the sand, then carefully replace the soil which has been removed. The sand provides good drainage and so maintains the health and prolongs the life of the bulbs.

After the ground has frozen slightly, a covering of loose straw, leaves or other litter should be placed over the bulb plantings to prevent the alternate freezing and thawing of the ground and afford necessary winter protection to the bulbs.

After the flowering period, the foliage should be allowed to ripen, that is to turn yellow for at least half its length, before the bulbs are lifted and stored. If it is necessary to utilize the space for other crops, the bulbs may be lifted, together with as much dirt as will adhere to the roots, and planted in shallow trenches until the foliage is well ripened. They should then be lifted, carefully dried, and stored away in a dry place until planting time.

In general, tulips will do better if lifted and replanted annually, though the late varieties do very well if allowed to remain in the ground three or even four years. Most daffodils do best if replanted at the end of the second season, but the white trumpet kinds should be lifted annually. Certain varieties may be naturalized in the garden or lawn, and these will thrive and multiply themselves for years if they have a happy situation.

For indoor bloom, bulbs must be potted early. They cannot be successfully forced for flowers until the roots have had opportunity to make abundant growth. This usually requires eight to twelve weeks. If the flowers are wanted for succession throughout the winter, the bulbs should be potted in groups at intervals of two or three weeks, but none later than the middle of November. Crocuses for indoor bloom should be potted early and should not be brought into heat before January. The bulbs should be set at such depth in the soil that their tops slightly protrude above the surface. Do not pack the soil, as this will have a tendency when the roots develop to force the bulbs out of the pots.

Two parts of fibrous loam, two parts of leaf mold, one part of sharp sand, and one part of a dependable fertilizer make an ideal potting soil. An inch of stones or broken crockery should be placed in the bottom of the pots to provide drainage. After potting, water thoroughly, then place the pots on a bottom of coal ashes to protect from worms. The pots may be buried in a trench which has been provided with thorough drainage, then covered with boards over which several inches of soil or other protective covering are placed; or they may be kept in a cool dark cellar, but in this case they must be watched carefully to keep the soil in a constantly moist condition.

Any time after plenty of roots show through the bottoms of the pots, the bulbs may be brought into the heat. As a rule, the finest blooms result when the bulbs are grown slowly and kept rather cool.

A pretty bed of hyacinths in graded shades of lavender and blue may be made up of Enchantress, Schatel, Count de Andrasy, General van der Heyden, Grand Maitre and King of the Blues. Yellow tones may be introduced among the blues by Primrose Perfection, City of Haarlem and Buff Beauty; and Arentine Arendson, and LaFranchise will make the bed or border brighter with an edging of white. A nice bed of perfect trusses of hyacinth bloom is a sight to charm away the cold weather of spring and the chill of a saddened heart. But for real beauty, grace and poetic suggestion, the stiff hyacinths, in spite of their wonderful volume of fragrance, cannot compare with the narcissi, daffodils and tulips. These are peculiarly fitted to the happy days of spring, and certainly no other flowers furnish more enjoyment as continual companions. They constitute the real keynote of the spring garden.

The tulips show a wide range of coloring from the most brilliant and striking colors to rich shades and quiet tones, which make possible almost infinite combinations of color harmony. An entire article could not do justice to the subject. What is here written must be considered as a mere skeleton, and suggestive rather than instructive.

For brilliant mass effects in early spring the early tulips are great favorites. The brighter colors and shades predominate in this class. An exquisite pink border of early tulips will include the following varieties: La Triomphante, Queen of the Netherlands, Van Gooyen, La Riante, De Vlieger, Princess Wilhelmina, and Proserpine. White and orange may be combined handsomely with Frans Hals, Princess Helen, Jaune Aplati, Leopold II, Golden Lion, Duchesse de Parme and Hector.

Cottage tulips, also known as old English garden tulips, constitute a wonderfully interesting class. They are tall-growing, ranging from eighteen to twenty-four inches in height, and the showy flowers are wonderfully interesting and stately. The varieties Picotes, Retroflexa and La Merveille are superb for massing in beds or in clumps in borders.

The New Lily Flowered Tulip is a distinct novelty of the present season. It is the result of the crossing of Tulipa retroflexa with a pink Darwin variety. In form and growth it is superb, with substantial flowers which retain the distinctive form and elegance of retroflexa. It occurs only in a few named varieties.

But of all varieties of tulips the Darwin group is the most queenly. It is said that dream gardens are painted with Darwin tulips because of their great wealth of colors, shades and tints. And dream gardens must exist before a really successful garden can materialize.

The Darwin is a late blooming tulip, its blooming period corresponding closely to that of the cottage tulip. The Darwin, however, is quite distinct in habit, height, form, and coloring. It has a larger bulb than other sorts. The young leaves are larger and stouter, the stalk is stronger, and it grows anywhere from twenty to thirty-six inches tall. In majesty of form the flower is unexcelled. The open bloom resembles a perfect goblet or a large egg in form. Solid colors characterize the flowers, which appear in a wide variety of crimson, scarlet, pink, purple, heliotrope, lavender and mauve. The coloring of the Darwins is better in partial shade. The following varieties form beautiful combinations: shades of pink,—Margaret, Clara Butt, Edmee, Baron de la Tonnaye, George Maw, Princess Elizabeth and Pride of Haarlem; Purple and lavender,—Lantern, Mrs. Potter Palmer, Eutrepe, Marconi, Viking, Erguste, La Tristesse, Jubilee and Rev. H. Ewbank. There is a long list of named varieties in darker tones as well as in the softer shades.

Both cottage and Darwin tulips may be left in the ground two to four years if desired. They should be planted about six inches deep, and the same distance apart.

## Daffodils

"Daffodils that come before the swallow dares," is quite expressive of the airy grace and the early season of this beautiful race of flowers. The cottage and Darwin varieties are the aristocrats among tulips, though the early varieties are more extensively planted. So, tulips in general are planted perhaps 100 to one of the narcissi, which constitutes a grievous error. The narcissi, it is true, lack the vivid coloring of the tulips, but far surpass them in delicacy, in variety and in gracefulness of form. The colors are not garish, and one never tires of them. Also a planting, once made, is well nigh permanent, as many of the varieties, if left undisturbed, increase in size from year to year. Some varieties, particularly the Poetaz group, may be naturalized on the lawn or in the meadows by the thousand. Imagine, if you can, the striking effect of a field or a broad border on the edge of a meadow or woodland with narcissus Poeticus and its related varieties blooming by the tens of thousands. A similar planting also is most effective as a border separating a garden path from the edge of a pond.

An extensive planting of narcissi in naturalized groups becomes easily the most delightful flowering season in the calendar. In planting bulbs for naturalization they should be placed in natural groups and then should be left undisturbed. They are easily capable of taking care of themselves, and under favorable conditions multiply in a most satisfactory manner. Narcissus Poeticus naturalizes admirably in almost any dry soil, but will not thrive in wet ground. The following varieties, however, flourish in wet soil and have the added advantage that they are sufficiently inexpensive to use for naturalizing: Narcissus Poeticus Ornatus, Emperor, Empress, Barri Conspicuous, Golden Spur, Princeps, Figaro, Sir Watkin, Orange Phoenix and Biflores. Emperor, Empress, Bicolor and Golden Spur are standard varieties which are always good. Among the newer exquisite varieties which are noteworthy for coloring, size or form are Van Waverens' Giant, the largest of all. It has a primrose yellow perianth and a bright yellow trumpet. Campernellii Rugulosus, an elegant double yellow narcissus on a tall graceful stem. Will Scarlet, Creamy White perianth, wide brilliant orange scarlet crown. Olympia, a giant Emperor with a richer, deeper color, fine for either indoor or outdoor culture.

## Peonies

Who does not love the peonies? More even than the rose, the peony deserves to be called the queen of flowers. Its history goes back more than fourteen hundred years, and it has always been one of the most popular of garden flowers. But the past generation has witnessed a real renniassance of peonies, which seem each year to take on an increased popularity. When one becomes acquainted with the merits of many of the newer varieties, the temptation is strong to devote one's entire garden space to this flower. And, indeed, who knows a single plant that would give more satisfaction as an exclusive garden inhabitant? All peonies, even the common old-fashioned ones, are good, but the glorious beauty of the finer of the new varieties language cannot describe. In size, form, coloring, ease of culture and extreme hardiness they actually surpass the rose.

Peonies should be planted in August or September. Roots planted now will, many of them, bloom next spring, but the flowers of the first season of bloom are never satisfactory. Peonies are not at their best until three or four years after planting. It is not necessary to plant large clumps, as ordinary plants will give fully as good results the second season after planting.

The single peonies are too little known. They have been sadly overlooked. In masses they are even more effective than the double varieties, and are fully their equal in the beauty of the individual flowers. Besides, they come into bloom earlier and last longer.

Peonies are classified as single, semi-double, Japanese, Anemone, Crown, Bomb, semi-Rose and Rose. These types represent all the distinct types from a single peony to the completely doubled form. The peony color chart lists about 360 colors in more than 1,400 shades. The known varieties, more than 2,500 names, but all the best in form, character, color and size, may be included in 200, possibly even in 100, which would constitute the very cream of all the named varieties.

Peonies flourish in almost any soil and in nearly any situation excepting one of full shade. They are practically never subject to disease and give good results even with entire lack of particular attention. At the same time, in increased size and abundance of bloom they amply repay any particular care and feeding that may be given them.

If you do not already possess a peony garden, start one this month by planting a dozen choice named varieties of which the following is an excellent suggestive list:

Asa Gray. A very large beautiful and full flower. Carnation Salmon, powdered with carmine lilac.

Avalanche. Large perfectly formed flowers of milk white, with creamy center and a few carmine stripes. Free flowering, late, of splendid habit. One of the best.

Duchesse de Nemours. A cup-shaped flower of great beauty, sulphur white, creamy in the bud.

Eugene Verdier. A large cup-shaped flower, flesh pink with yellow and salmon shadings.

Felix Crousse. An enormous, brilliant red flower, extra fine.

Edouard Andre. A large globular flower. Deep crimson-red with black shadings and metallic reflex. Golden stamens. Wonderfully effective.

Humei. A splendid old-fashioned sort. Very large deep rose pink flowers. One of the latest.

Mme. Emile Gallee. Large, flat, rose type. Deep lilac white. Late.

Mons. Jules Elie. The King of peonies. Immense globular flowers. Glossy lilac pink shading to deep rose with a silvery sheen.

Modest Guerin. Light solpherino red. A large flower.

We are wont to think of May as the busiest month of the garden season. But, especially in the flower garden, if we improve the opportunities here described, and numerous others which might be mentioned, who shall say that September is less pregnant with glorious gardening possibilities than any other month of the year?

# Self-Poisoning as the Cause of Disease

ALEXANDER BRYCE, M. D.
Birmingham, England

*(Continued from August)*

## The Absorption of Living Germs

There is however quite an influential minority who strongly object to the title "auto-intoxication," not because they do not believe that some sinister influence is at work slowly undermining the health and vitality of the individual and keeping him continually on the borderland of disease, but because they do not consider the evidence of absorption of toxins sufficiently weighty to explain all the facts. They agree that toxic substances are actually absorbed from the colon, but they regard Nature's lines of defense as being perfectly capable of overcoming their hostile action. To explain the undoubtedly malign effects produced, they advance the theory that sub-infection (that is the absorption of the living and dead bacteria themselves) is a much more likely hypothesis.

It is well known that in typhoid fever and other infectious diseases in which the infective agency enters the body through the alimentary canal, bacteria are found not only in the intestine but in the blood and tissues of all parts of the body.

Experimental research also has demonstrated that rabbits which survived repeated intravenous injections of living colon bacilli for a sufficiently long period (88—142 days) showed pronounced lesions in the kidneys, liver and spleen, each organ exhibiting an increase in connective tissue; but it was considered hardly possible for bacteria to penetrate the intestinal wall in health. Careful research has, however, now established this fact and Prof. R. J. G. Adami, now Principal of Liverpool University, who first advanced the theory of sub-infection, states that in his own laboratory at Montreal, Ford, Nicholls and others have found that not only do the lymph-nodes of the respiratory tracts and of the alimentary tract of normal animals constantly afford cultures of bacteria, but the liver and kidneys yield cultures of pathogenic (disease-producing) and non-pathogenic bacteria. He has also demonstrated that the leucocytes are constantly carrying bacteria into the system, and where inflammation exists in the alimentary tract this occurs more extensively.

## Sub-infection

These bacteria settle down in the tissues and do not cause suppuration, but are destroyed by the body defenses, liberating their toxins, which kill the tissue cells in their immediate vicinity, and produce enough irritation to cause their replacement by fibrous tissue. This process he believes is perfectly capable of producing all the symptoms mentioned by Lane in his famous treatise on "Chronic Intestinal Stasis," such as loss of fat, wasting of the muscles, pimples on the skin, which, like the rose spots of typhoid fever are brought about by lodgments of bacteria in the cutaneous capillaries. The offensive perspiration he thinks might be due to the diffusion of volatile bodies of the skatol type. Sub-normal temperature is one of the marked features of B. Coli infection, and this may also produce melancholia and mental irritability.

The rheumatic aches and pains are due to interstitial fibrosis, and Rosenow of Chicago has shown experimentally that this condition is set up by the absorption of streptococci. These organisms are found constantly in the saliva and in the nasal cavity, and cover the skin in countless numbers. Virulent forms, many absorbed from the bowel, are found in the crypts of the tonsils, infect the gums and set up pyorrhoea, and it is now certain that rheumatism, neuritis and many other diseases owe their origin to the invasion of the body by these oral streptococci.

## The Cause of Gall Stones

The etiology (causation) of gall stones is now thoroughly understood from the work of Lartigau. He has shown that living organisms absorbed from the intestine into the portal blood stream, were passed through the liver, where most of them were killed as in a sewage "destructor." The organisms, both living and dead, were then expelled from the liver in the bile, which flowed into the intestine, and no harm was done. But under certain circumstances, as for example when the organisms were particularly virulent, an acute inflammatory condition, varying in degree according to the intensity of the affection, arose. In the case of a lady who was first operated upon for cancer in the upper part of the breast and thereafter for appendicitis, a third operation was found necessary for gall-stones (one big and three small stones being discovered); and the gall bladder was not only found filled with pus so far as was possible on account of the stones present, but one pint of it was removed from the outside of the gall bladder. The causation in this case would have been inexplicable but for Lane's work on "Chronic Intestinal Stasis," where all these conditions are mentioned as directly due to stagnation in the bowel.

But the degree of inflammation of the gall bladder may be so slight as to display only an evanescent dyspepsia or catarrh of the bile duct, with or without jaundice, because the germs are less virulent and the bile has free exit from the bladder. Where, however, there is any retardation in the outflow of the bile, any stasis or stagnation, (and sepsis and stasis must go together) the irritant presence of the organisms causes the gall bladder to excrete an increased flow of cholesterin in an effort to take care of itself. The little band of organisms thus attacked is soon coated with the cholesterin and other salts, and becomes a gall-stone—a sign post or monument indicating the entombment of this company of invading germs.

The urine is often found to be so flooded with bacteria which have been expelled from the blood through the kidney after escaping the toils of the liver, that a satisfactory vaccine can be manufactured therefrom.

## Toxins Induce the Growth of Monsters

In experiments on fowls Lusting has been able to render them immune to the vegetable poison abrin, but the progeny of these fowls were very feeble and more susceptible to the poison. The majority of the eggs did not hatch but contained monstrosities.. We know that alcoholic parents breed children liable to epilepsy and irritability. Adami states that there is a close relationship between human monstrosities and the toxins of infectious diseases. There is no doubt that degeneration arises from the use of toxins, and this suggests that tea, coffee, opium, tobacco, and many drugs, such as mercury, quinine or even phenol, indol and skatol, may also exert a degenerative influence on cell life, possibly sufficient to cause transmission to the progeny.

I have thus given a brief description of the two theories to account for the undoubtedly malign effects resulting from chronic intestinal stasis, and it does not appear to be of much importance which of them we adopt, because there is very little doubt that both processes are in operation.

Adami, in the latest edition of "Chronic Intestinal Stasis," admits that the absorption of toxins—the products of intestinal fermentation and putrefaction—by lowering the vitality of the tissues, may render them more susceptible to the deleterious action of pathogenic microbes, permitting germs of low virulence, which in normal health would have had little effect, to multiply and set up definite lesions.

He even goes further, and states that there is a group of morbid states induced indifferently by intestinal stasis, that is, not due constantly to the entrance into the circulation of one particular species of microorganism, although one particular species may predominate. The way is paved for the onslaught of germs by the preliminary toxaemia caused by absorption of poisons from the intestinal canal.

## The Average Man Saturated with Toxins

Clearly, then, in the average civilized human being we find that the blood and tissues are daily flooded with toxins and microbes, and but for the protective powers of the body it would be impossible for any one to keep in perfect health. Indeed, when we begin to reflect, the wonder is, not that we find so many diseased persons, but that we find so few; although further reflection will reveal the fact that perfect health is really a great rarity.

We lavish money on our houses to secure perfect drainage for them, but we fail to secure it for ourselves. If the main drainage system of any dwelling house leaks, saturating the subsoil with sewage matter, we soon put ourselves in communication with the sanitary authorities. Yet we permit the main excretory system of our bodies to harbor foul, stinking and putrefying substances, which overflow into all our tissues, flooding them with living disease-producing germs, and are surprised and often aggrieved because we are stricken down with illness.

For that is the effect of chronic intestinal stasis, and it is perfectly clear by the Kellogg standard of intestinal activity that we are all victims of colonic stagnation. This means that there is an excess of toxic material in the small intestine, with absorption into the circulation of a greater quantity of poisonous products than can be converted into harmless substances and excreted by the organs of defense.

## The Body Tissues Are Immortal

Hence degenerative changes are originated in all the tissues. Carrel's experiments prove that the tissues, for all practical purposes, are immortal, and show the best results when their toxic products are carried off effectively. Delay in the large bowel creates stagnation, with a damming-back all the way up to the stomach. The pelvic colon is distended, and this exacts a strain which is thrown particularly on the under layer of the mesentery, binding down the junction of the iliac and pelvic segments. Soon there develops through crystallization of the lines of force, a band to counteract the displacement, and this fixes the large bowel on the left to the pelvic brim. This is "the first and last kink," and in the female it often attaches itself to the left ovary, inducing it to become cystic, and in time producing an ovarian tumor.

Similar membranes are formed on the caecum, Jackson's membrane, the splenic and hepatic flexures of the colon; often the appendix is anchored, and appendicitis set up. Finally a band is formed a few inches from the ileo-caecal valve, which controls the ileal effluent particularly in the upright posture—called "Lane's Kink." It is the most important of these, not necessarily inflammatory but evolutionary bands, because it may not only give rise to attacks simulating appendicitis, but by its dragging effect on the duodenum may congest its membrane, forming ulcers and cancer, with spasm of the pylorus and dilatation of the stomach. Thereafter, the ducts of the pancreas become infected, and gall bladder is invaded, cancer or gall-stones formed, and spasm of the œsophagus or cardiospasm created.

### Lane's Picture of Auto-Intoxication

Lane's very vivid picture of the results of chronic intestinal stasis includes the following items: (1) Loss of fat, contributing to prolapse of internal organs. (2) Wasting of the muscles, setting up scoliosis (lateral curvature) and flat foot. (3) A thick, inelastic sticky skin with pigmentation. (4) A subnormal temperature, with cold extremities which may be pale, bloodless and anaesthetic or blue. If the blueness is widespread, depending on a damping-down of the heart muscle by the toxins and a breaking-up of the red blood corpuscles, the term "microbe cyanosis," suggestive of Raynaud's disease, is applied. (5) Mental apathy or misery, neuralgia, neuritis, epileptiform tic, headache, loss of temper, neurasthenia. (6) Rheumatic aches and pains. (7) Atrophy of the thyroid gland. (8) The blood pressure raised or lowered according to the kind of toxins absorbed. (9) Degenerative changes in the heart. (10) Breathlessness, almost asthma. (11) Degeneration of the kidney. (12) Falling out of the hair or growth of hair where not wanted. (13) Pancreatitis and diabetes as above described. (14) Gall-stones. (15) Eye diseases.

There are also many indirect changes due to the lowered vital resisting power of the tissues to microbes such as (*a*) pyorrhoea, (*b*) tuberculosis, (*c*) rheumatoid arthritis and loose joints, (*d*) nephritis, cystitis, pyelitis, endometritis, salpingitis, (*e*) exophthalmic goitre, (*f*) Still's disease, (This last is due to an infection of the alimentary canal by the staphylococcus citreus. It is really a variety of polyarthritis affecting children, and marked by an enlargement of the lymph nodes generally of the spleen, accompanied by erratic attacks of fever.) (*g*) pustular skin diseases, (*h*) colitis, (*i*) ulcerative endocarditis.

### How to Play for Safety

With such a record of possible disaster in store, it is surely incumbent upon the judicious man to take such precautions as will insure his safety or at least minimize the risk of anything approaching intestinal stasis. There would appear to be no very great difficulty in obviating this contingency; for the pure scientist says that all that is really necessary to keep the proteolytic bacteria in subjection, is to increase the supply of carbohydrate food, so that the saccharolytic bacteria may gain the ascendancy.

It cannot be denied that if this injunction is acted upon before any of the serious damage incidental to colonic stagnation has had time to mature, the effort should be attended by complete success. But the best evidence that this simple procedure for changing the intestinal flora has failed ignominiously is the fact that patients are to be found who are willing to subject themselves to such a drastic form of treatment as complete excision of the colon, the part of the intestinal canal which is most disabled by the adhesions, kinks and diverticula formed as the consequence of stasis. There can be no question that time and again this radical operation in the hands of competent surgeons has transformed a hitherto hopeless chronic invalid into a comparatively healthy and vigorous person.

There are of course many modifications of this surgical device and frequently excellent results are obtained even when a less severe form of operative interference is practiced than complete excision. But a major operation seems a very severe penalty to pay for ridding one's self, say of a muddy complexion amongst other things, and yet it has been done, and will be done again when no other therapeutic measure promises success; and a considerable degree of success is the only justification for such a drastic procedure, although the plea has been advanced that the colon is not only a useless but a dangerous organ to possess.

### The Colon is Dangerous but not Useless

Dangerous it may certainly be if maltreated and abused by being loaded with food which was never intended to enter its portals, more particularly if the residues are pent up for longer than twenty hours after the food they represent has been eaten. Useless it certainly cannot be, so long as it is capable of absorbing, and this it does as far down as the junction between the descending and iliac colon. At this point in ordinary circumstances a meal swallowed at 8 A. M. should arrive no later than 10 P. M. where it may tarry until after breakfast next morning, or two, three, four or even six mornings thereafter. This is of course a most unconscionable and reprehensible delay, for although very little harm could arise before 8 A. M. on the succeeding morning, every moment thereafter is fraught with disastrous possibilities for its unfortunate owner.

### Unrecognized Constipation

Probably there will always be a field for surgical interference in certain cases of chronic intestinal stasis, but it is to be hoped that it will be a continually diminishing one. Nevertheless, it will assuredly be necessary to use great discrimination in selecting the form of treatment appropriate to each particular case in accordance with the extent of the damage sustained. I am satisfied from an extensive experience of cases of this kind that it is quite possible to be suffering severely from the effects of chronic intestinal stasis without being aware of the reason. Most people are content to have their bowels opened once each day, without careful inquiry or examination as to whether the evacuation contains the residue of a meal which has been partaken of one day or three days before. It is only after they have undergone quite a considerable amount of agony that they learn the urgency of obtaining accurate information on this score, and then they are inclined to wonder why they have been so long in ignorance of such an important matter.

# Scotch Diet

V. E. MACKINTOSH

Up to the time of railroads and modern means of transportation, the diet of the Scotch Highlander was very simple. The hardy mountaineers, most of them living in the Highland glens far from the beaten paths of commerce, lived on what they could grow on their small patches of land. For breakfast they would have oatmeal brose, which consisted of one good handful of oatmeal put in a wooden basin with sufficient salt to season, and sometimes a little butter. Boiling water was added and the mixture was stirred until it was of the consistency of a thick paste. Milk was then poured over the top and it was eaten with a horn spoon. To finish, there would be some oatmeal or barleymeal cake and skim milk cheese, with a glass of milk to wash it down. Occasionally this would be varied by having a boiled egg in place of the cheese. For dinner they would have vegetable or pea soup, potatoes, salt mutton or pork and barley bread. Sometimes in lieu of meat cheese would be served. It can be readily understood why they would have mutton or pork, as nearly every family fed a hog or two, a certain portion being made into ham and bacon, and the rest salted down. Each family also kept a few sheep except the very poor, who would buy one or two in the fall of the year and salt them down. The wool from the sheep was carded and spun, and then sent to the local weaver, to be woven into cloth. This was a rough hard cloth which wore well and was the forerunner of the present Harris tweed which is now spoken of so highly, and for which we have to pay so much.

With the very poor people the dinner would consist of soup and potatoes, or potatoes and milk. When outside work was finished for the day, oatmeal porridge with milk was partaken of. The porridge was well boiled, and when ready for serving was put in a large basin or bowl in the center of the table. All the family and guests would draw their chairs around the table and each was provided with a basin and spoon. A large jug or pitcher of milk was also on the table and each one helped himself to oatmeal and milk. If there was any left over, it might be made into bread or fed to the chickens. Just before going to bed, supper would be served, consisting of potatoes boiled in their jackets, and salt herring or dried codfish boiled. This sometimes was varied by having potatoes and butter, or cheese, or just potatoes and milk. Occasionally, they would have wheat flour scones with butter and milk. Tea was a luxury and made its appearance only about once a week, usually on Sunday, when there might also be an oatmeal pudding and once in a while a chicken for dinner.

Most of the Highlanders kept some live stock, such as steers, young cows and chickens. They also made some butter, but most of these items were sold to get money to pay the rent and to buy things which could not be grown or made at home. Times have changed, however, and the Highlander now diets himself much the same as his brother of the lowlands.

The diet of the Lowland Scots of the country districts, in most cases, consists of plenty of good plain food. For breakfast, oatmeal porridge or brose with milk, bread and cheese, or ham and eggs are served. Tea is also commonly used now. For the mid-day meal they usually begin with soup of some kind, vegetable or pea, and bread. This is followed by potatoes, meat or fish and bread and cheese. Tea or coffee do not appear on the dinner table of the Scotch. In the country milk is plentiful and forms a large part in the workingman's diet. Sometimes rice, sago, or cornstarch pudding is served but as a rule the workingmen are not given to eating much of these dishes. They are considered all right for children but not strong enough for the hard-working man, unless it is on Sunday when he is at home idle. What he does like is a light form of plum pudding made with flour, some shortening, currants and raisins and just a little syrup. Sometimes a suet dumpling is made. This consists of flour, suet and sugar, boiled. Another form of dessert sometimes used is "Rolly Polly," which is made like a jam roll, put in a cloth, boiled and served hot. Fruit pies of the different varieties are also sometimes served. It is all right as long as it is something solid. During the week, when work is over, the meal partaken of consists in most cases of bread and butter, scones and cheese. Jam or jelly is always on the table. Once in a while there may be cake served, but on the whole the country Scot does not care much for sweets. Few meals pass without cheese on the table. No matter how fine a meal may be served, the dinner usually ends with bread and cheese. Just before going to bed they usually have oatmeal porridge and milk. This is sometimes varied by having potatoes and fish of some kind, or potatoes and milk, or it may be bread and cheese and a glass of water, but in any case a supper of some kind there must be. Burns says in one of his songs that he would rather go supperless to bed than get up in the morning early.

Fish of all kinds enter largely into the diet of the Scotch. The reason is obvious, as there are so many fish caught in the sea around the coast that they are comparatively cheap. Fish are cooked in so many different ways by the Scotch that the same variety may appear before you half a dozen times in a week and will always be dressed in a different garb. The diet of the rural Scotchman is simple, strengthening and healthy. They usually begin and end the day with oatmeal.

Two young physicians were graduated from Edinburgh University at the same time, one going South and the other North. Several years later they met again and in the course of their conversation the one who had gone North asked his friend how he was getting along. He replied that he had made enough to retire. He then asked the same question of the one who had gone North, and he replied that he was working away all the time, but he had gone in the wrong direction to make money, as the people among whom he was living put too many oatmeal poultices in their stomach to require the services of a doctor very much.

This article has been written chiefly about the rural Scot, but it might be well to add that the rich man and the city man all start the day with oatmeal porridge and milk, although the rest of their diet is very similar to that partaken of by all the English-speaking races.

# The Grape Cure

The grape cure has been practiced for hundreds of years in certain parts of central Europe. It has long been well known and is described by Tibbles, an English author, as practiced "in the Tyrol, at Montreux, Meran, Gries, Botzen, Wiesbaden, and other places. The 'cure' occupies six or seven weeks, and consists of the consumption of from 3 to 12 pounds or more of grapes per day, the quantity being gradually increased. The rest of the food, as well as the amount of fruit, should be in accordance with medical instructions. The mastication of a large number of grapes is said to injure the enamel of the teeth, and may cause soreness of the mouth; this is best prevented by eating a little bread after the fruit, or washing the mouth with a solution of bicarbonate of soda, and by avoiding the mastication of the fruit, the grapes being swallowed after just cracking them with the tongue.

"The treatment is begun by the consumption of 2 pounds a day—i. e., ½ pound before breakfast, ½ pound in the middle of the morning, ½ pound after the midday meal, and ½ pound about 5 P. M. The time and amount of the increase depend upon the disease and condition of the patient. In pulmonary cases it is rarely advisable to prescribe more than 2 pounds a day; in gastric and intestinal catarrh, 3 pounds daily is the usual quantity; 4 pounds being the amount in gouty conditions, calculus, vesical affectations, hæmorrhoids, chronic constipation, etc., and from 5 to 6 pounds in abdominal plethora, with hepatic congestion and chronic constipation. As a cure for phthisis, the value depends entirely on the liberal feeding and climatic conditions; and care must be taken that diarrhœa is not induced by the use of the fruit.

"People who are convalescent from many diseases, those who are overworked or suffering from various debilitating causes, will find the 'cure' useful to them in proportion to the benefit derived from change of climate and occupation. The corpulent and obese derive great benefit from the 'cure' when it is associated with a spare diet, restricted in the amount of fat and carbohydrate.

"The laxative effect of the 'cure' begins in three or four days, and is of great service in relieving the abdominal plethora resulting from passive congestions due to cardiac debility, chronic bronchitis and emphysema, chronic constipation, liver disease, and other causes of portal congestion. In some cases the effect of the cure is enhanced by the low protein value of the diet—e. g., gout and gouty concretions; in others, such as chronic constipation, gastric and intestinal catarrh, by the mechanical effect of the skins and seeds; and, in another group of cases, by the diuretic effect of the sugar and potassium salts; and in obesity by allaying the craving for food on a diminished diet."

Another advantage of the grape cure is the "change of the intestinal flora" which it accomplishes, doubtless its most important effect.

# Sources of Sugar

Dr. A. W. Murrill tells us that "cane sugar was first cultivated in India, and was introduced from that country into the valley of the Euphrates, Arabia, Egypt, and Spain. Columbus, on his second voyage in 1493, brought it into the New World, where it was destined to become one of the most important crops.

"The first sugar exported to Europe was grown on the plantations established by Cortez in Mexico. The soil and climate of Cuba are peculiarly adapted to the cultiva- of sugar-cane, and it has been grown on the island in great quantities. The first plantations in Louisiana were a failure, but the purple variety of cane has been found to grow well there and also in other parts of the southern United States.

"Sugar-cane requires an abundance of sunshine and water and a deep, fertile soil. In planting, the stalks are laid lengthwise in the furrows, and each joint sends up a shoot, which later produces suckers. When ready for harvesting, a field of sugar-cane resembles a corn-field, but the plants are somewhat larger and there are no tassels and no ears. The stalks at this time have been growing about twelve months and have changed from green to reddish in color, while most of the lower leaves have fallen away. They are cut by hand with a long knife, stripped of their leaves, and carried on carts or small cars to the sugar mill.

"A fire in a field of ripening cane is a terrible thing and much dreaded by planters. There are also hurricanes, blights, borers, white ants, rats, and other pests to be reckoned with wherever cane is grown.

"Sugar-cane stalks are surprisingly heavy and contain 18 per cent of sugar. The sweet juice is extracted by crushing them between rollers and it is then boiled down to a point where the sugar separates out as brown crystals, leaving behind a syrup known as molasses. Pure white sugar is made at the refineries, where the impurities are removed by washing, filtering, decolorizing and repeated crystallization.

"Many other plants contain sugar, and have been used for its manufacture. The bamboo was used for this purpose in India even before sugar-cane. In China, sorghum has long been a favorite source of syrup. In the United States, the Indians tapped the wild maple trees and made maple sugar very much as it is done today. In Mexico, the century-plant was formerly a source of sugar, but it is now almost entirely given over to the manufacture of *pulque,* an intoxicating beverage.

"Plants store for their own use starch and sugar, and man uses these stores for his food. Nature alone seems able to supply the sweet crystals which the chemist has so patiently sought to make in his laboratory. For these mankind must depend largely upon sugar-cane and the sugar beet."

# Legislation Against Tobacco

HENRY M. STEGMAN

is bad for growing boys or for men when used to excess; in moderation, it is a great boon. Whiskey may make a fellow quarrelsome and altogether loathsome, but a pipe is a soothing relief after the cares and worries of life. Many eminent physicians smoke and permit their patients to smoke."

Science, however, has pitilessly shown that both substances are poisonous; they differ in immediate results, but end alike in harm. One reason why alcohol was attacked so successfully is that some of its effects are so obvious. Tobacco is more insidious; a lot of scientific facts must be disseminated before mankind realizes its evils.

A forecast of the national prohibition of tobacco will seem less absurd if we recall the attitude of our fathers toward strong drink. They not only tolerated it but regarded it as one of heaven's best gifts to humanity. Men of accepted respectability were not ashamed to drink from one to three bottles of port every evening after dinner. On the early records of a church in Connecticut is an entry of the purchase of rum for use on some festal occasion. Then there is the classic incident of the life insurance company in England which didn't want to insure a man because he was a teetotaler and therefore a bad risk.

Unquestionably, propaganda against tobacco has reached large dimensions and made much headway, Many men, perhaps most men, still smoke, but an advance has surely been made in this great reform. The legislative program is well under way, A man is prone to believe that his side will win. If he is certain that tobacco is a great evil, it may be easy for him to foresee its banishment by law. Recognizing that strong feeling is thus likely to impair the judgment, the effort is nevertheless here made to set down in sober impartiality the considerations regarding legislation against tobacco.

Unquestionably, the prohibition of alcoholic stimulants has brought the question of tobacco to the fore. A certain parallelism forces itself on the mind. Five years ago, national prohibition seemed far in the future to even its devoted adherents. The impossible has happened with whiskey; why not with tobacco? Organization of a committee of prominent men to fight nicotine followed hard on the downfall of rum. Liquor interests charged that the Anti-Saloon League was going to attack tobacco next, although this statement was denied. The two causes were thus instinctively linked together. Undoubtedly, many reformers who formerly devoted their energies to the warfare on the drink habit, are now turning more attention to its kindred evil. The Government has always placed the two in the same category by raising huge revenues from them as not merely luxuries but as deleterious luxuries.

Arguments are not lacking that this coupling of tobacco with rum is uncalled for and unjust. The reasoning runs something like this:

"A cigar doesn't lead a man to neglect his work or squander his means or ruin his health or beat his wife. Of course, tobacco

Nearly every State has laws prohibiting the sale of cigarettes to minors; Kansas, North Dakota and Iowa have anti-cigarette statutes. These are not always enforced, and here we have an outburst against "fanatical" legislation which, being disregarded, merely brings contempt on the body of the law. There is, it is true, a strong objection to ordinances which, owing to public indifference, become dead-letters. Prohibition of alcohol went through much this same history, but popular sentiment was gradually educated until officers were compelled to carry out the mandates of the Legislature. Present imperfection is no bar to future improvement.

Early crusaders against the liquor habit painted brilliant word pictures of the drunkard and his family, seeking to induce people to sign the pledge. But the fate of alcohol was settled not by eloquence but by science. Demonstration that strong drink in any quantity was detrimental to business efficiency and injurious to the human frame, led to the debacle. A similar movement, based on the evidence of trained investigators, is under way against tobacco. The fate of this evil depends on the spreading of physiologic facts. Already, business has begun to discriminate against the smoker.

Apologists for tobacco make great use of the old argument which was urged in behalf of whiskey, that harm lies only in excess. Tobacco is certainly a poison; two drops of nicotine will kill a dog or a cat; to say that a poison is not injurious is a contradiction of terms. If it is not injurious, it is not a poison. Physicians prescribe poisonous drugs to meet abnormal conditions, but that has no bearing on the habitual use by a well man of such deadly substances. Extensive experiments show that even in small quantities, tobacco does physical and mental harm. Any use of tobacco is an over-use.

Another reason for believing that the crusade will gather strength with the years, is the growing recognition of the fact that health and longevity are largely within human control. Decrease of mortality from infantile diseases, tuberculosis, typhoid fever, yellow fever, diphtheria, small-pox and various other plagues has followed the advance of science. People realize that in a large measure, disease is not a visitation of Providence but a retribution for ignorance, carelessness and excess. A declining birth-rate and an increasing death-rate from several diseases in middle life, have emphasized the need of all possible efforts for the conservation of health. Diminution of sickness and prolongation of life are of vast economic importance to the country. Every ounce of strength is called for to increase production and to pay off the huge war debt. The cause appeals both to patriotism and self-interest. One flank attack that has been made on tobacco has been crowned with success. Nearly all the States forbid the sale of cigarettes to minors. It is difficult to conceive of a man so ignorant and debased that he wants his young sons to smoke. Cigarettes, it has been proved, are injurious to boys not only physically, but morally. Yet what subtle change takes place when a youth reaches sixteen or eighteen, that renders him proof against harm from a substance which had previously been deleterious? Is there some regeneration overnight on his birthday which alters his bodily nature so absolutely? Of course, the thing is ridiculous on its face. As he gets older, he has more power to withstand the detrimental effects, but the physiology of eighteen is the same as that of twenty or forty or sixty. Gradually must come a recognition of the incongruity of limiting a good law to those under sixteen or eighteen while those a year or two older are not protected. The Boy Scout movement is developing a widespread sentiment along this line.

This brings up an allied consideration—smoking among women. Beyond question, this has increased greatly. Probably most persons regard it as deplorable. Yet why discriminate between a man and his adult daughter or his wife? It is true that tobacco is worse for them than it is for him, but the difference is merely one of degree. If it is disgusting to see a woman puffing at a cigarette, why is it not at least mildly so to see a man do it? Many men are realizing how illogical this is. The very spread of the habit among women promises to be a coadjutant in the campaign against the "weed," as its devotees facetiously call it.

It should not be overlooked that the female sex intervenes in the situation from another angle. It would be idle to deny that women suffrage will gradually give a notable impetus to the anti-tobacco crusade. Some women smoke, but those who do not are far more numerous. These latter are not likely to have much tolerance for the habit among their sisters. Every argument against tobacco which appeals to a man is twice as effective to a woman. Some of them see considerable sums selfishly spent on cigars each year which might far better go for other purposes. In questions of child conservation, education and public hygiene, women have shown more interest than in ordinary political issues. It is quite reasonable to believe that they will feel a deep concern as to whether the widespread use of tobacco shall continue unchecked. There are laws against selling cigarettes to minors, it is true, but somehow many boys get hold of them. Obviously, the sure way to protect the younger generation is to cut the dog's tail off just behind the ears by prohibiting tobacco altogether.

Throughout the land, women have organized countless clubs with a more or less serious purpose. In most of these, the study of present day problems has a place. Mothers' clubs and parent-teachers' associations are informing themselves on children's welfare measures. Every such body is a potential focus for anti-tobacco propaganda. The sum total of these activities will become much greater when all women have the ballot and can help to put into effect legislation for health protection. Public health nursing, which is developing with great strides, will also be a valuable educational factor.

Then, too, there is the element of public taste. Standards of refinement are steadily rising. Our forefathers permitted indelicacies which are no longer to be thought of. Table manners have taken on a fastidiousness not dreamed of by former generations. Even after the Civil War, tobacco-chewing was common among the gentility of many parts of the country. A changed attitude toward this practice now exists. Smoking and the resultant odors are certainly unpleasant to abstainers who must associate with followers of the habit. Is it not reasonable to suppose that a more refined stage of civilization will rid itself of this uncleanness?

The stress of war called attention to much needless waste and hastened the closing of all breweries and distilleries. Throughout the world there is an undersupply of food, clothing, homes and practically all the other necessaries of life. Yet in this country perhaps $2,000,000,000 are spent annually for tobacco and its incidentals. This is one-eight of the cost of the great war to the United States Government. If this were merely waste, it would be appalling; but who can estimate in dollars and cents, the detriment to health and efficiency?

Furthermore, the country, formerly a generous exporter of foodstuffs, now raises little more than enough for its own population. If the present tendency continues, we shall soon import more food than we export. This condition is generally regarded as deplorable. But 1,500,000 acres of land are devoted to the culture of tobacco. Moreover, this crop takes a great deal from the soil and requires a continual use of fertilizers. If this land and labor and plant food were given over to wheat and corn, there would be a considerable increase in their production. As the food situation becomes more and more acute, we may expect close study of the remedies. Suppression of tobacco will then come in for serious consideration.

Health education has been making great progress in recent years. Is there any good reason for believing that this movement will cease? And will it not bring conviction to the great majority that tobacco is a National incubus that must be cast off?

You can't fool most of the people all of the time!

# The Diet of the Eskimo

Mr. L. M. Turner, writing in the 11th Report of the Bureau of Ethnology, page 232, tells us about the diet of the Hudson Bay Eskimo. He says:

"A great portion of their food is eaten raw, but it is invariably cooked when it conveniently can be. Frozen food is consumed in great quantities. I have seen them strip and devour the back, fat and flesh from the body of a deer while the fibres were yet quivering. The entrails of many species of birds are taken from the body, and while yet warm, swallowed much after the manner of swallowing an oyster. The eggs which have been incubated to an advanced degree are as eagerly devoured as those quite fresh. The deer meat, killed the previous fall and frozen for three or four months, is cut into huge chunks and gnawed with as much satisfaction as though it were the finest pastry. On such occasions, I have seen the person appointed to chop up the frozen meat scatter the pieces among the expectant crowd with as little ceremony as that of throwing ears of corn to the hogs in a pen. For a change the frozen pieces of meat are sometimes warmed or thawed before the fire. The blood of the deer is often mixed with the half-digested mass of food in the stomach of the animal and the stomach, with its contents, and the addition of the blood, eaten raw or boiled. Sometimes it is laid aside to ferment and then frozen and eaten in this condition. Strips of fat from a seal and the blood of the animal are put into a kettle and heated, the oily liquid being eaten with the greatest relish. Seal oil is used for food in about the same manner that we use syrups. Years of almost daily intercourse with these people have failed to show the ability of any person to drink seal or whale oil without illness resulting. They never drink pure oil under any circumstances except as a laxative. The statements often made that these people drink oil as a food is simply preposterous. Such statements doubtless arose from seeing other preparations of food having an abundance of oil upon them. Lean flesh is often dipped in oil and then eaten. When a seal has been killed, and is being brought to camp, the hunter signifies his success from a distance, and those in camp raise a glorious shout. The animal is drawn ashore and skinned. The flesh is devoured raw as the process goes on, or may be divided, certain portions being given to different persons. The blood is collected, and when the meat is boiled it is mixed with the hot liquid and forms a nutritious dish, eagerly devoured by both adults and young. The children revel in this dish. The feast is continued until the flesh has been devoured and the people gorged to their utmost capacity. Stories are told and general good humor prevails. The different species of fish which frequent the shallow waters of the bay are used for food."

It is interesting to notice the care the Eskimos take to supply themselves with vitamins. It is evidently for this reason that they eat the stomachs of deer and the entrails of birds, with their contents.

According to Steffanson, the practice of eating raw and frozen liver is also universal among the Eskimos, and undoubtedly for the same reason. Grass and other vegetable foods found in the stomachs of the reindeer and the entrails of the ptarmigan contain rich stores of vitamins, which are not found in oils and fats to any considerable extent, and are almost wholly absent from lean meat.

In animals, the vitamins are gathered into the liver and other glands and are found only to a very slight extent in other tissues.

It is evident, then, that some of the most disgusting features of the diet of the Eskimos are the result of their instinctive craving for vitamins, there being no other means by which they can be obtained during the greater portion of the year. It is possible that in this craving for vitamins on the part of some remote ancestor may be found the origin of the practice of eating raw oysters. The fat end of the oyster is its enormous liver and kidneys, which like the liver of all animals, contains a store of vitamins. These vitamins are in part destroyed by cookery, hence the Eskimo practice of eating liver raw.

But the practices of the Eskimos are the result of necessity and not choice. According to Mr. Turner, the Eskimos, when in the vicinity of trading stations, eagerly adopt the use of flour, bread, peas, beans and rice, and "are very fond of them, and often express regret that they will be deprived of them when on their hunting expeditions."

In the short summer season, many berries and a few other edible things grow to maturity, and these are eagerly seized upon by the native as soon as they make their appearance. Mr. Turner tells us:

"During the season when various berries are ripe, all the people gorge themselves. They have a special fondness for the akpik (*Rubus Chamasmorus*). The sun scarcely reddens the side of these berries, locally known as 'bake apple,' before the children scour the tracts where they grow, and eat of the half-ripened fruit with as much relish as the civilized boy does the fruit purloined from a neighbor's orchard. Other berries contribute their share as food. The 'akpik' is better known in this country as the 'cloudberry.' "

Nansen, in his interesting work "Eskimo Life," page 89, confirms the observations of Mr. Turner, and tells us that the contents of the reindeer's stomach is regarded as one of their delicacies. According to Nansen, "the last thing an Eskimo lady enjoins upon her lover when he sets off reindeer-hunting, is that he must reserve for her the stomach of his prey. It is no doubt because they stand in need of vegetable food that they prize this so highly, and also because it is in reality a very choice collection of the finest moss and grasses which that *gourmet,* the reindeer, picks out for himself."

When the foregoing was written by Nansen, neither he nor any one else was aware of the fact that the vegetable contents of the reindeer's stomach contained the precious vitamin which is, for the most part, lacking in the Eskimo diet, and that this was the fundamental reason for its being regarded as a delicacy, along with the entrails of the ptarmigan.

The Eskimos do not flourish on their meager, unbalanced and very deficient diet, and are by no means content with it; for they make the most of the scanty vegetable products of their country, eating with great relish the seaweed, dandelions, dill berries, crowberries, sorrel and angelica, which spring up almost over night, when the surface of the ground is thawed out to the depth of a few inches, by the sunshine of their twenty-four hour summer days.

# Applied Science Promotes Race Degeneracy

Professor Patrick of the University of Iowa holds that increase of comfort, idleness and luxuries which we owe to science are not blessings, but aids to race degeneracy. In an article in the *Scientific Monthly,* the Professor says:

"Applied science has surrounded us with comforts, conveniences and luxuries of every kind. But just what will be the effect upon a race of men, disciplined through a hundred thousand years of hardship, of this sudden introduction to comfort? This question puts the whole subject of applied science in a new light. Perhaps we have been applying science to the wrong ends. Possibly science should never have been applied to making man comfortable, but to making him perfect. It may be that there is great danger in comfort. The biologist holds it in grave suspicion. Degeneracy is its sequel. It was through struggle and warfare and the overcoming of obstacles that man fought his way up to manhood. With infinite effort he gained an upright position the better to strike down his enemies. Strong legs and stout arms were correlates of his growing brain, the latter itself finding its necessary support in a powerful heart and vigorous digestive system. There is an especially intimate connection and inter-dependence between the brain and the muscular system, making the latter indispensable to the proper functioning of the former. Now, applied science has shown us how machinery may take the place of the stout arms and the motor car may be a substitute for the strong legs, while science itself and the applications themselves draw more and more heavily upon the powers of the brain. The harder the brain has to work in the pursuit of science and the mechanic arts, the more it stands in need of the physiological support of the muscular, digestive and circulatory systems. But, for maintaining the health and integrity of these, our present manner of living is not well adapted.

"'Oh, well,' it is replied, 'there are no signs of physical degeneration yet. Look at our armies. Finer physical specimens never marched out to meet an enemy.' This is true and we may add—braver ones never went to war and they were 100 per cent efficient. Yes, but they were picked men, the flower of a vast nation. They were from the upper tenth physically. They were the young males. They were the 65 per cent of the young males not rejected by the examining boards. The germ-plasm of the best of our race could not suffer deterioration in the short time of the 'comfort' regime. But upon biological grounds we must believe that the disastrous consequences of such a regime upon society as a whole may be serious in the highest degree.

"Another of the most brilliant triumphs of applied science is seen in our countless and wonderful labor-saving devices. The effects of these is either to decrease the amount of labor or by increasing its efficiency to increase the products of labor. But we simply assume that increased wealth and decreased labor are human blessings, although both may be quite the opposite. It has been seriously questioned whether civilized man has gained enough moral and physical poise to be trusted with the immense wealth which applied science, working upon our suddenly acquired store of coal and iron, has supplied. The war did not count the poverty of the nations among its causes, and if greed is the root of most modern evils, it has not been shown that increasing wealth and increasing comfort have lessened it.

"Again, just why has it been assumed that labor-saving devices are a human benefit? Work, and indeed physical work, is a blessing, not a curse. During the past history of man, which we may reckon in hundreds of thousands of years, Nature has said to him, 'You must work or die.' Labor-saving devices, discovered at a recent moment in this vast history, may enable one-half the members of society to live without work and reduce the working hours of the other half, with results most pleasing for the moment, but perhaps most disastrous in the end.

"It is not conceivable that applied science might be used not only to reduce the hours of labor of those who are now crushed with excessive labor, but to devise means of preventing the disastrous biological consequences which must follow the cessation from healthful labor among a considerable portion of society?

"And then there are the time-saving devices. It is no doubt because of the temper of the day that so few of us have ever questioned their intrinsic value. But with all these time-saving devices it is not quite apparent that we have any more time than formerly. Sometimes it seems as if we have less. Leibniz lived before the time of typewriters and dictographs, yet he is said to have had a thousand correspondents and in addition to his duties as court librarian, diplomatist and historian, he found time to discover and perfect the differential calculus and to write great works on philosophy. In any case the value of time-saving devices will depend upon the use of the time that is saved. As it is, it appears to be used very largely for carrying on more business, to make more money, to buy or invent more time-saving devices. Even if there results a certain amount of leisure, much depends upon the manner in which the leisure is spent. It is spent in sitting quiescent in a darkened moving-picture room, gazing spell-bound at a tawdry drama, the gain is not great."

# "The New Quackery"

The *Journal of the American Medical Association* thus aptly condemns numerous fakish "cure-all" schemes which are being offered the public through newspapers and magazines:

"There are fashions in quackery. The 1919 Model is that which commercializes the trend of the public toward the so-called drugless methods of healing. A mail-order course on 'How to Cure What Ails You, without Drugs: in Six Easy Lessons,' by Dr. Quack or Professor Fake, is the lure. It proves a veritable gold mine for those who promote the scheme and for the magazines whose advertising pages furnish the point of contact between seller and purchaser—the spider and the fly. The theories so solemnly propounded by the exponents of the new quackery are usually made up of about 5 per cent banalities of elementary science and 95 per cent of pseudo-scientific flapdoodle. The occasional rational, if obvious, things that quacks of this type say mislead intelligent people into accepting the ridiculous theories that are thus commercialized. Because the product sold is not put up in a bottle, the public assumes that it is free from quackery; therein it is mistaken."

# Department of Eugenics

Conducted by WILHELMINE E. KEY, Ph. D.

# A Biologic View of American History

What is to be the place of America among the nations of the future? At no time in our history has this question been more to the fore than it is today. In the minds of some there has emerged for her during the years just past a possible world-rôle hitherto undreamed of, while to others, studying the many internal problems which confront her, she appears set on a course such as in the case of other nations has inevitably led to self-destruction. Is America to live blindly, unconsciously, blunder into transient greatness, and then as surely as other nations have done, pass into decadence and death? In our search for the answer to these questions, we are scrutinizing our creeds, our customs, our political and educational systems, and trying to evolve a program of national conservation.

## Nature and Primitive Man

In the evolution of human thought there has been nothing more wonderful than the change in man's conception of his relation to Nature. Primitive man regarded himself as the plaything if not the victim of the gods. These were beings more or less superior to the natural order of things. If the gods smiled, the sun shone, the rains descended, the corn grew, and man waxed fat and flourished. If the gods frowned, storms raged, disease ravaged, and he was tormented and destroyed. In the same way races and peoples rose and fell in obedience to forces outside of themselves.

## Modern Idea of Man in Nature

Our modern conception is the outgrowth of the scientific view of Nature. With the acceptance of the theory of the survival of the fittest in the struggle for existence, came the thought of man as an integral part of Nature. He was shown to be the culmination of the evolutionary process. Still the victim of many of her unknown or vaguely comprehended processes, he more and more lays her under tribute. He ascertains her laws in order to make her subserve him. In recent years he has so far extended his dominion as to dream of attaining for himself hitherto unrealized perfection. A growing knowledge of the laws pertaining to his own development and which account for the rise of superior personalities gives this hope a more certain foundation than science has ever before afforded him.

As we study the course of man's evolution, the most remarkable steps in his progress have been those taken in realization of self. Reason, knowledge of self, and will are relatively new-comers on the stage of life. For long periods before these made their appearance, instinct was the chief guiding force. Instinct makes the lion stalk its prey; it leads the bird to build its nest and provide food for its hungry young; it even achieves those wonderful organizations in which the ants and bees live their lives of mutual helpfulness.

Prior to instinct in the path of evolution, we came upon fundamental attractions and repulsions as a means of self-development. The attraction of the leafy plant toward the light, of the root toward the water, of the blind, footless animalcule toward what may serve it as food,—all these are examples of links in the chain of forces that make possible the upward path to human self-realization and responsibility of conduct. Man, the culmination of these processes, depends on all of them for the complex manifestation of his existence.

With such a long path behind him it is perhaps slight wonder that reason and will, his latest acquisitions, should be relatively weak in the sum total of the forces which direct him. For man, "the reasoning animal," is impelled on his course chiefly by powerful instincts. He is entirely controlled by them in childhood. Even when reason and will emerge as guiding elements in conduct, all too often they serve largely to sanction the course set by overwhelming instincts.

## How a Nation Grows

Our study of human society reveals it as a sentient, growing thing. Slowly, through the ages, we see it passing from faulty, imperfect conditions to a coherent, organized whole. With this growth in organization comes increasing self-realization, which should result in conscious self-direction toward the worthiest possible ends.

When a new continent is opened for settlement, there is always the pushing out of crowded, hungry populations in search of elbow room and food. Or there is the quest for easily gotten fortune. These impulses are more or less blind, for seldom are there authentic accounts to be had of the new land. The colonist knows little of what stands before him. If he is careless, weak, imprudent, he will go down in the sharp struggle for existence to which he is called. If farseeing, plucky and hardy, he will survive his early struggles and together with the equally fortunate, found families of similar strong fibre. This process means the obliteration of those elements of the population who are not quick to see the main chance and seize what is to their advantage; it means, on the other hand, the propagation of the aggressive, strong and persevering elements with "the blood" which made them what they are. Thus but a few generations would suffice to give a definite cast to the population of a new country depending on the nature of the inherent traits of its first settlers and the demands made on them by the new environment.

Later comes a period of self-realization. With the prosperity which the sturdy virtues bring, comes leisure and the means of culture. If this simply means self-indulgence, physical and moral deterioration will ensue, with their attendant fatal results. But culture in its broadest sense should consist in the mutual understanding of all the parts of the complex social structure, a comprehension of the mutual needs of these parts and the striving to supply those needs. With the coming of self-realization, then, there should come also the conscious direction of the life of the whole toward the highest attainable ends. Without such self-examination and conscious direction in the face of obstacles, there will be a reversal of the course of development which established the hardiest virtues as her leading characteristics.

## The Pioneer Spirit in America

America has exemplified in great measure the course of development here outlined. In the war lately ended, she showed herself to a waiting, fearful humanity in the rôle of invincible deliverer. How was it possible for young America to take this part in the great world struggle? To enter in with an ardor and resistlessness that carried new courage to the wavering armies of the Allies and brought the doubtful issue of years to a triumphant close? It was the spirit of '76 and of the intrepid colonists before that, transmitted through generation after generation of pioneers. American "preparedness" in its eugenic aspect consisted in the selection for survival of the fittest through the operation of the natural and economic factors which inhere in the struggle for the mastery of a new continent. It was this intrepid spirit with its attendant resourcefulness, which had been rendered dominant by the adverse conditions continually to be met in the conquest of a virgin continent, and had been transmitted through generations of pioneers, that flamed in "the Buddies" that went overseas.

### America's First Settlers

Let us glance for a moment at our early colonists to see whether they were the stuff of which good Americans were likely to be made. It is true that among them were convicts and adventurers. But as settlement proceeded, as the severe tests which these must face became known, many of the convicts preferred the gallows, and the easy adventurer drifted elsewhere. So it came to pass that most of immigration was from the most virile stocks of the Old World. The voyage hither weeded out the weak and sickly; and once here, other hardships such as an untoward climate, semistarvation and the ravages of malaria carried further this process of selection of the fit. Most of those who survived were accordingly hardy, thrifty, industrious and independence-loving people.

There was thus early established here some of the strongest stock which the Old World afforded. It was from the intermarriage of these stocks that there arose those superior families which were destined to take the lead in the formative period of the nation's history. In these families, by the fortunate crossing of able lines, there arose from time to time superior personalities. Such became great leaders in troublous periods of national development. They seemed to catch a farther view than did their fathers before them, and they were able to impress their views on many of their fellows. Such were the Adamses, the Dwights, the Edwardses of New England, and the Lees, Randolphs and Marshalls of Virginia, to name only a few of those to whom we owe our educational and political institutions.

### The March Westward

And this process did not stop here. In these able, virile families of the East, we find virile off-shoots pushing to the westward. These hardy pioneers subdued the continent, opened up its resources and carried the torch of Eastern learning and inspiration to right living over the land. So new States were founded having largely the genius of the old, institutions were founded embodying the ideals of the parent institutions, and sometimes, because of the more youthful, impetuous spirit of the West, taking short cuts to the realization of these ideals.

Thus America came to stand for a golden opportunity, which irresistibly attracted worthy types of immigrants to our shores. The striving, earnest spirit of the people, the rich reward to be found here for serious effort, drew from the Old World those peoples who were capable of enduring hardship and conceiving our ideals. The union of such worthy strains with those which earlier found a home here further strengthened the dominant tendencies of the pioneer type. The outcome of this process has been the production of a virile people seeking to embody national ideals, many of which are unique in history.

### Present-Day Problems

When we remember some of the problems facing us today, the story of American development appears to be not so simple as here outlined. Our strikes and walkouts and our sweat shop tragedies tell their story of want and dissatisfaction. The examination of school children and of recruits for the army give cause for grave concern as to the physical and mental condition of certain classes of our population, while studies in our social institutions indicate the alarming possibilities of such deterioration.

In our industrial organizations we have moved from the simpler and more healthful conditions of pioneer life. The personal touch between the employer and his men, the pride of the worker in the finished product of his labor, the immediate responsibility for the quality of this product are among the good things that have been largely lost. How these and other needs shall be supplied in the more complex organization of today are among our perplexing social and industrial problems.

## The Present a Time of Self-Realization

America stands today at the parting of the ways. Under the shock of the war and the crises she has been called upon to face since its close, she has arrived at an hour of self-realization. That there are elements of splendid virility within her has been proved by her response during those crises. At the same time she has become aware of alien and destructive forces at work in her. All of her tissues are not sound.

So far as these tissues *are* sound, as we have pointed out, it is due to the prevailingly sound stock that early found a foothold here and to the stringent conditions which continually selected the best of the individuals springing from those stocks to be the parents of ensuing generations. Leadership has been found to have its origin in these able stocks through the intermarriage of superior families. The institutions established by such leaders in turn attracted a type of immigrant of which good Americans could be made, and by the amalgamation of these the excellences of the pioneer type have been transmitted from generation to generation.

All of these processes have in large measure gone on blindly and instinctively to make us what we are. If instinct has done so much, should not intelligent direction do more?

It is time for us to realize how far there has been a change in these processes during recent years. It is time we made searching analysis of the genetic as well as the environmental influences which have produced our excellences as well as our defects. It is time that we made a more careful study of incoming families to determine what is likely to be their contribution to our national life, and that we locate points where through various causes, native stocks are degenerating. Furthermore, an active interest in our best families in working out the origins of different types of leadership that have shaped out national life, should have its effect in stimulating enthusiasm for "good blood," while the story of worthy immigrant families and their amalgamation with the best of the old colonial stock, would bring an intelligent appreciation of their value as national assets. In our efforts for race betterment, the vaster effort by far must spring from the enlightened individual conscience. The knowledge that a faulty heritage due to unwise matings has rendered the individual a national liability rather than a national asset, should bring home to him as never before his responsibility to the state in the choice of a mate. Thus in free conscious selection of able rather than indifferent family lines, with the resulting predominance of the better endowed strains, we may hope to find that efficient self-direction which in our national development is to make the best race possible in the America of the future.

# The Trend Cityward

The census returns to date are fraught with grave eugenical significance. Primarily, Eugenics is concerned with the quality of the population rather than its quantity. However, we can readily see that the quality of a population is dependent on its relative quantity. That is, growth in population is reflected in changed economic and social conditions, and these in turn affect the quality by influencing the comparative birth-rate of the various classes. Changes in economic and social conditions also affect marriage selections, which in turn determine the character of the forthcoming generation.

One of the most threatening aspects of the census returns is the drift cityward of our population. While the population of the United States, taken as a whole, has not increased 20 per cent, we find such phenomenal increases for our large cities as the following: Indianapolis, Ind. has increased 34.5 per cent, Toledo, O. 44 per cent; and Youngstown, O. 67.4 per cent. Knoxville, Tenn. shows an increase of 114 per cent; Alma, Mich. of 174 per cent; while Akron, O. outstrips all others with an increase of 201.8 per cent. The explanation of these figures is of course the establishment of vast manufacturing enterprises at these points. We find in the South a corresponding drift toward the centres of cotton milling, and in the Southwest toward places showing great activity in the oil business.

There is a corresponding drop in the rural population. Many districts actually show a decrease over the figures for 1910. As an example of this, we may take eight counties of Indiana which show a decrease in this period ranging from 5 to 12 per cent.

When we reflect that all this means the continual drawing from the rural districts of its best blood to the city and there sterilizing it, the situation appears grave indeed. As in the past, the crowding of vast city populations must prove a long step in race deterioration, and we have here our warrant for effort to reverse this process before it is too late.

Among our ten largest cities the most marvelous growth is recorded for Detroit. In 1910 it had 527,973 inhabitants. It now has 993,739, an increase of 113.4 per cent, which places it fourth largest in the United States. The returns for New York give it 5,621,151, thus ranking it as the largest city in the world. An encouraging feature of these returns is the actual loss in the highly congested borough of Manhattan as compared with the growth of outlying boroughs. Of the latter, Queens now shows a population of 466,811, an increase of 64.3 per cent, while the Bronx has increased 69.8 per cent, now having a population of nearly three-quarters of a million. New York's great population is thus slowly moving towards its suburbs. This desirable end has been effected by her rapid transit system. Along with this has gone a most commendable growth of "garden cities."

We should urge the return to real country living for as many of our people as is possible, but where this is not practicable, the bringing of the country to the city through these garden cities, is an invaluable step toward the solution of our problem of race conservation. Let the family whose work must be in the city live in the sparsely settled suburbs. Here rents are cheaper and life in the open cuts down the doctor's bills. It is possible to utilize the open lots for gardens and thus measurably reduce the high cost of food as well as improve the health of the garden worker.

All these are important eugenical measures. If moving to the suburbs makes possible a family of four children where before it was possible to rear only three; if the contact with Nature means greater vitality for these children, longer life and larger families for them, the anti-eugenic effect of the trend cityward can be in large part counteracted.

# Mothers of Eminent Men

Most biographers do full justice to the influence of the good mother during the formative period of our great men. There is, however, another side of her influence that is less dwelt upon. That is the part played by the maternal ancestry in bestowing the gifts that made possible the career of the illustrious son.

Dr. Davenport, in his study of the heredity of naval officers, found that the traits determining their efficiency came in mainly through the mother's side. The daughter of an able officer was more apt to have an able commander among her sons than were her own brothers. Some of the leading traits necessary to efficiency in naval command are love of adventure and of the sea, coolness under fire and ability to handle men; and these, in the long succession of fighters found in some American and English families were far more frequently carried along through the female line of these families than the male.

Robert E. Peary, the first man who carried the Stars and Stripes to the North Pole, owed many of his sterling qualities to his mother. Among these were the singular thoroughness and perseverance which he showed in everything that he attempted. His father dying when Robert was only three years old, his mother returned with him to her girlhood home in Maine. There Robert became an explorer of the forest far and wide, and learned to swim fearlessly the wild, cold waters of Casco Bay. Later, the mother went with her son to college and continued as his most trusted friend. Thus through association and inheritance he acquired the unfailing consideration for others, and a gentleness and patience which were among his shining characteristics. Thomas A. Edison, judged by many the most useful American of the present day, has declared that his mother was the making of him. She was a teacher before she married Edison's father, and to her he owes many of his mental gifts as well as practically all the schooling he had in his youth.

The mother of Henry Ward Beecher was Roxanna Foote. She was in her way quite as remarkable as his father, Lyman Beecher. Both were of distinguished New England ancestry, with forbears prominent in struggles for religious and political reform. Possessing like her husband great intellectual and moral vigor, she had besides a handsome and dignified presence. With these she dowered this son, as well as with a love of the beautiful and a poetic temperment. Although she died when he was very young, it is probably the possession of these characteristics that made her a continuous living presence with him.

The mothers of our public men, though themselves gentle and retiring, have brought to their sons salient qualities which were chiefly responsible for their success. The blood of "the first families of Virginia" with all that that meant for capacity in statecraft, was brought into the makeup of Washington and Jefferson through the marriages of their fathers.

# Department of Physical Education

# Hygienic Exercises

### C. WARD CRAMPTON, M. D.

*The Specific Purpose of Hygienic Exercises.* During life the body is never wholly inactive. Even during sleep its physiological processes increase with its activity, and the scale of these activities can be constructed as indicated by the following diagram. All of our physical training exercises correspond to types 3, 4, 5 and 6 and most of them to types 4 and 5. The height of the columns indicate approximately the physiological activity. Above-the-line work exceeds repair, and we may call type 5 and 6 a "state of exercise" and types 1, 2 and 3 a "state of rest," although the terms, rest and exercise are always relative.

We have a sense of exercise when we sit up after a period of illness, progressing from type 2 to type 3. We have a sense of rest when sitting down after walking, or in walking after running. Hence rest is experienced in change down the scale—exercise in going up the scale.

This diagram is introduced for the purpose of bringing clearly before the mind of the reader, the thought that exercise is a normal variation of physiological process.

*Formal vs. Informal.* Both formal scientific gymnastic exercises and informal exercises such as games and athletics are appropriate to the purpose. Formal exercises have the advantage of definite construction and prescription, and dosage is always under control. They are, however, less interesting and less likely to be used habitually in after life. The recreative, or informal exercises, have the advantage of being natural. They normally involve many sets of muscles and they are interesting and much more likely to be kept up during life. For this reason we make generous use of mimetic exercises. With them, however, it is more difficult to control dosage.

### Selection of Exercises

I. Hygienic exercises should be *rhythmic,* consisting of alternate contraction and relaxation of the muscles. This as we have seen aids the circulation, the muscles acting as an accessory circulation pump. Static contraction of the muscles, it will be recalled, interferes with circulation.

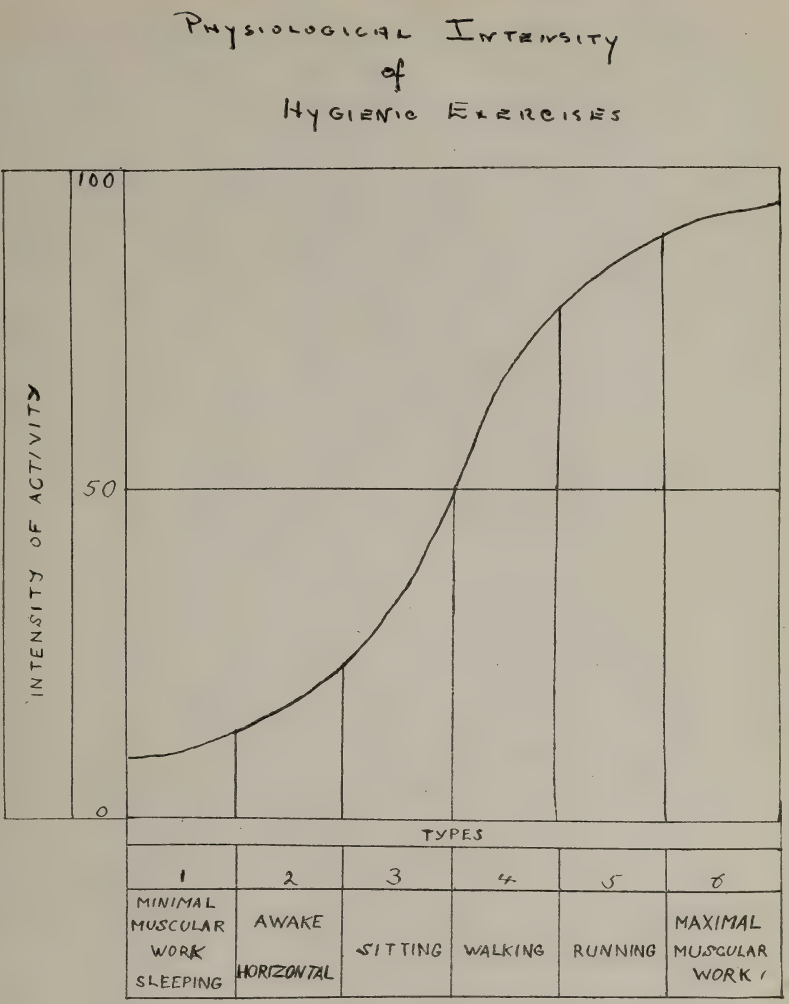
II. *Large muscles and large muscle groups* should be used in preference to small muscles, because a single contraction of a large muscle equals many contractions of a smaller muscle, and since each contraction requires an effort of will, the single contraction of a large muscle is much more economical in nervous energy.

III. Hygienic exercises should be *simple* and *well known,* with the least nerve strain and conscious attention; for it is the exercise of the muscles we wish, not the exercise of the nervous system.

IV. *Many repititions of moderate muscular contraction* will produce greater physiological results than a few heavy compactions. There is a moderate *weight against which a muscle* contracts at best advantage. This is known as the normal load. The best physiological results can be obtained by exercise with the load.

V. *Amplitude.* It is best to have a large sweeping movement which gives a complete contraction of the muscles. This provides the best circulatory pumping effect and muscular massage, although the most foot-pounds can be done by a muscle if the movement is limited to the middle of the total arc of the movement.

VI. *Speed.* Hygienic exercises should be of moderate speed. If they are very fast, the contraction of the antagonistic muscles controlling the movement increase the work greatly and the nerve strains are likely to be extreme.



VII. To a moderate degree hygenic exercise should provide *mechanical jar* as occasioned by running and jumping, because of its stimulating effect upon the body.

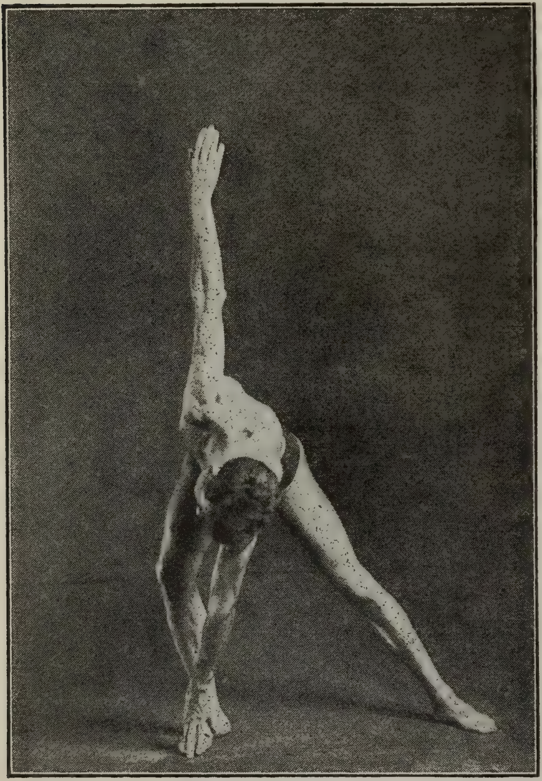
*Summary.* Hygienic exercise is typically a simple rhythmic movement of large muscles, of large range, of moderate speed, simple, easy, well-known and often repeated. There is no necessity for a large variety. A few exercises well learned will answer all purposes. The best hygienic exercises are the simplest, and these are racially old co-ordinations used in original form or modified slightly to serve gymnastic purposes.

### Varieties of Hygienic Exercises

*Running.* Running meets all the requirements of hygienic exercise. It is natural, simple, rhythmic, involving large masses of muscles and easily controlled. It should be used briefly in some form in the introductory part of the lesson and again in the hygienic section. Every child should learn to run at an early age, and should be able to run continuously at a slow rate for fifteen or twenty minutes without undue fatigue.

Every person should retain this ability up to old age, for running should be practiced in some form two or three times a week up to the age of sixty.

In the introductory section of the lesson, running may be changed into skipping, hopping and various simple dance steps. It should not occupy more than one third of the time devoted to introductory work. A simple and pleasing form of hopping is as follows: Hop in place, eight steps left foot, eight steps right foot, four left, four right, two left, two right, run four steps to a halt. In the hygienic section, running should take a prominent place in at least three of the five weekly periods. Children should be trained to run, gradually increasing from fifteen seconds to four and five minutes. Following the Boy Scout method, one may run one hundred steps and then walk one hundred steps. It may however be varied by raising the knees high, taking a longer stride, lifting the heels up behind and the like. Running should be carefully safe-guarded against overdoing. It is of course necessary that the teacher know that no child suffering from disease or hyperthyroidism takes part in this exercise.



Trunk Bending and Twisting

*Trunk Exercises.* Next to running, trunk bending and twisting is the most important class of hygienic exercises, because of their direct effect in squeezing and massaging the abdominal contents, and secondly, because they strengthen the lower abdominal wall and aid greatly to keep the abdominal contents held up against the force of gravity. These two elements should be kept in mind in the selection of exercises.

Trunk bending forward for hygienic purposes is not complete without flexion of the hips and touching finger tips to the toes. Trunk bending to the right and left can be assisted by touching the finger tips to the outside of the knee. Trunk bending backwards best consists of an extension of the spine to the chest held high, bending but little at the hips, bending the dorsal spine and lifting the chest. This decreases the amplitude of the movement and limits hygienic results.

It is our purpose to make all movements ample. For this reason we seek to provide an *objective termination.* For instance, in trunk bending forward, the finger tips should touch the toes or the floor, trunk bending sideways, the knees. Unless this is done, the pupils are likely to slight the movement and little exercise results. This principle should be used throughout all hygienic work.

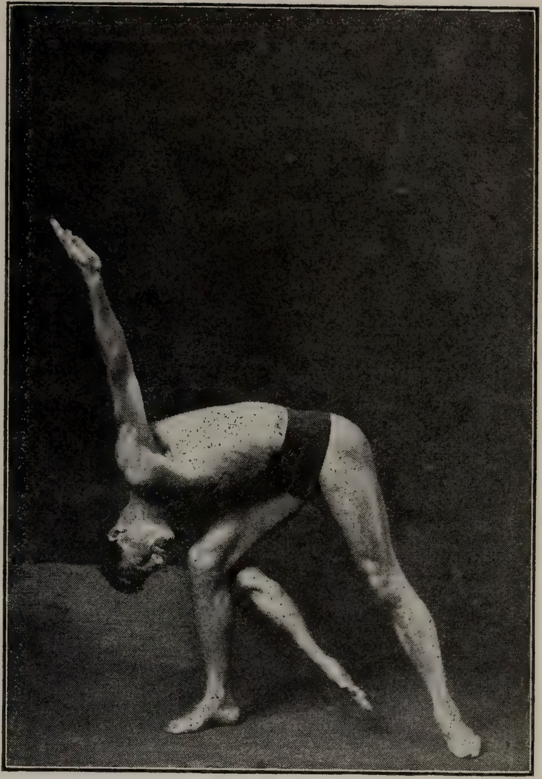
The best abdominal work is done lying on the back, raising the legs, or with the feet fixed, rising to a sitting position.

*Trunk Twisting.* Trunk twisting should always be done with a high chest and a contracted lower abdomen. It is best accomplished with hands on hips, using the weight of the arm to increase the load to be moved, or even better with a wide base and the arms stretched to the side. Various combinations of trunk bending and twisting are valuable. Chopping with a downward stroke or cutting as if chopping the base of a tree are mimetic, interesting, and especially useful. It is usually best to do trunk twisting exercises with the feet spread apart.

*Knee Bending and Charging.* These exercises use the large muscle masses of the thighs. Knee bending should always be used with caution, but when used should be full and ryhthmic, rebounding from sitting on the heels on each count. To insure this the thumbs are clasped behind and the finger tips stretched downward. These should be touched to the heels at each effort. This is the form of knee bending that was put into the two-minute setting-up exercise of the City of New York, because the children previously had performed the exercise only perfunctorily. Charging or lunging provides an element which may be used in exercises to add to their hygienic value.

*Dosage.* It is a matter of prime importance for the teacher to realize that she can fatigue and exhaust her class and do them serious damage by too much hygienic exercise. Against this she must continually guard. In the older days in physical training it was customary for the new teacher appearing before his class the first time to impress them with his importance by giving them such severe work that they became exhausted, stiff and lame. This may be good psychology, but it is dangerous physical training.

Dosage can be increased by increasing the number of muscles involved, increasing the weight moved (whether it be a part of the body or an additional weight such as a dumb bell) by increasing the leverage of the weight, by extending the number of repetitions of the movement and increasing the speed. It is not the purpose of the teacher, however, as a rule to increase the severity of the work itself, but rather to decrease it so that it may be continued without harm for an appropriate length of time.



Trying to Touch the Heel

It is advisable to devise exercises which contain a heavy and a light hygienic element, as for example:

**Exercise I**

1. Touching finger tips to toes.
2. Hands on hips.
3. Stretching arms sideways.
4. Hands on hips.

**Exercise II**

1. Deep knee bending.
2. Knees stretching.
4. Hands on hips.

In these exercises the hard work, i. e. trunk bending and knee bending, is alter-

3. Stretching arms upward

nated with a milder effort, i. e. arm stretching. This is the typical formation of the four-count hygienic exercise, and it should be used as standard procedure. Exercises of two counts with nothing but hard work are to be used with caution.

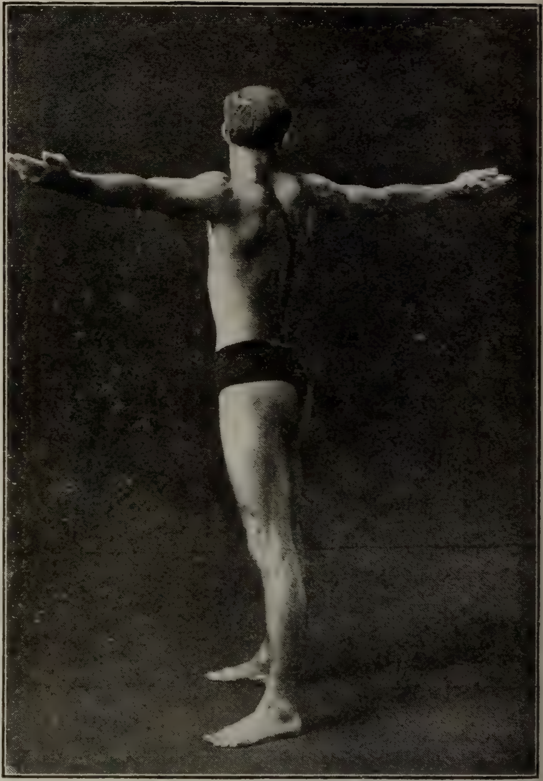
There is an opportunity also to insert an element in the four-count exercise such as arms upward stretching, which acts as an *extension element,* lifting the chest and head after the trunk has been compressed in some flexion movement. This helps good posture.

By using double counting, giving two counts to each movement, as explained in the chapter on "Commands," the speed of the exercise is diminished without decreasing its interest.

The number of repetitions of each exercise will depend upon its nature and severity. As a rule there should be a period of a few moments between each exercise. At times however, if the exercises are not too severe, it is of advantage to go directly from one, to another in a series which may be learned and formed into a 'drill.'' Since these exercises are rhythymic, they may be done to music with advantage, with the caution however that the performance should never be allowed to become perfunctory.

## Recreative Work

Under this title are included all forms of natural exercises, such as play, games, folk and other kinds of gymnastic dancing, athletic games and contests of all kinds. These are Nature's own forms of training. They provide educational and hygienic results of their own peculiar kind, and they add great service in social training They are filled with a varied series of different kinds of enjoyment and happiness.



Trunk Twisting

No physical training period is complete without its recreative features, which appropriately comes at the end of the lesson. Some physical training periods should be directed wholly to recreative activities. They are so varied and important that it is impossible to treat of them adequately in the present article.

* * *

# Home Hygiene and Economics

## Child Welfare in the Rural Community

CHARLES F. POWLISON
General Secretary National Child Welfare Association

What is child welfare? It is the welfare of "all the children of all the people." It is the welfare not merely of the orphan, the cripple, the feeble-minded or otherwise exceptional child, but of your child and mine. Moreover, it is the welfare of the whole child body, mind and spirit, during his entire child-life, from the months before his birth until he reaches full manhood, equipped to earn his living. It includes his parental care, infant and child hygiene, his training in right habits, his development through sound education, wholesome play and educative work, the infusing into his life of sound ethical and reverently religious principles.

Child welfare in America is not merely a city problem but also a rural problem, for more than half of our school children—more than 10,000,000—attend rural schools. It becomes even more urgently a matter for every rural community's profound thought and effort when we realize that the country child is physically inferior to his city brother. The death-rate of rural New York is higher than that for New York City. Among army rejections, the country boys figured more largely than those from the city.

If we consider rural education, we find the schools, libraries, lectures and other opportunities far behind those of the cities.

Even in the matter of recreation, country play, as compared with city play, is too often unsocial, unguided, and does not give all-round development, either physical or mental.

All these are recognized facts, and yet the country naturally should and actually can be the ideal place for rearing children. Let us briefly consider the main things needful to bring about this end. I offer no new scheme. No new scheme is needed—merely a little clear thinking to see what is needful, and then an earnest, determined, patient co-operation by the entire community to carry out its program.

### Good Roads and Child Welfare

An important step in rural child welfare is *good roads.* Without them the doctor and prenatal nurse find it difficult to visit the mother. Thousands of children are born yearly with no medical attention whatever, because of the lack of decent roads. Good roads make it easier to get together for every purpose— physical, educational, recreational and religious. A community may be filled with high purpose and a longing for fuller life, but without roads to link it with the outer world and to link its own members together, it is greatly hampered.

The rural community will naturally first consider the question of safe-guarding the health of its children. Every county should have an adequate and adequately paid staff of medical inspectors and physicians to provide prenatal and obstetrical care, enforce birth registration laws, oversee public sanitation, safeguard water, milk and food, and conduct campaigns for the extermination of rats, flies, mosquitoes, etc. Every rural school-house should receive rigid sanitary inspection and every school child be examined at least twice a year, and taught the elementary rules of hygienic living.

We talk of the country as the abode of pure air and abundant sunlight; but of what use is pure air if windows are kept closed? Of what use is sunlight if the blinds are drawn, lest carpets fade?

We think of the country as a dietary paradise, where fresh milk, green vegetables and new-laid eggs abound. But all too often the farmer's wife is serenely ignorant of the laws of dietetics and feeds her children on pie, doughnuts, pickles, underdone sausage and other unsuitable food. Even where she is a good cook and provides easily digested food, she is very seldom aware of the need for a balanced diet, and the farm children are fed too exclusively on a narrow range of foods.

### Country Children and Proper Bathing Facilities

Another hindrance to the health of country children is the absence in most farmhouses of proper bathing facilities. It requires a courage little short of Spartan to rise on a January morning, break the ice in one's pitcher and bathe in a freezing bedroom.

The Modern Health Crusaders and other efforts to instill health habits into children can make scant headway against such obstacles in the home. If, however, both home and community vigorously prosecute the health program suggested, the country child will speedily distance his city cousin instead of lagging behind him.

### Education Next to Health

Next to health, the most pressing question is education. The country school is often too cramped, unsanitary, ill-equipped, ill-taught. And yet there is no good excuse for this. Given good roads, it is possible to exchange several "little red schoolhouses" for a single commodious, healthful, well-equipped, truly educational school, with an adequate staff of properly paid and wisely supervised teachers. The poverty of the average rural school-life is the sadder when one considers the wonderful natural advantages that the country school possesses over the city school. As Mr. Herbert Quick says, "No city school can by any possibility acquire the paraphernalia for educational uses that every rural school possesses; and if it did, it would not relate to the lives of the pupils and their parents. It would after all be a false world in which the pupils were taught; but to the country child these things are their meat and drink and their mother's milk. The rural school constitutes one of the very great undeveloped assets of American life—of world life. One day, it will take advantage of its opportunities; and then people will emigrate from the cities to the farms in order that their children may have the advantages of rural educational facilities. For though the country may reject them the city can never buy them."

A most inspiring account of how one rural school made use of its opportunities is found in Evelyn Dewey's "New Schools for Old." In it she tells how, with but simple equipment, a country school was so linked with the home and community life that it became a real center of life and light, a joy and a benefaction to a whole miniature world.

### Play as an Essential to Child Health

Next to the country child's bodily health and mental equipment, we may consider his play, upon which his physical and mental development so largely depend. Surely a farm is the most delightful of playgrounds for a child. This is true; yet too often the country child must play alone or always with the same family companions. This tends to make any child bashful, awkward and taciturn, or selfish and unready to adapt himself to others, according to his natural temperament. It has been wisely said that no man can be of any service who does not know how to find companionship in himself and how to get on with other men. The country-bred child usually knows how to find companionship in himself, but all too often he is unused to getting on with others. The country child needs social, co-operative play. He needs to be taught games requiring skill, mental alertness and poise. He needs exercise that will straighten his bent back and round shoulders and give precision and agility.

Here again, the country has great natural advantages over the city. What boy does not prefer a hike up a mountain to a walk in the park, a woodcraft tramp to a natural history museum, a plunge in the lake to a marble swimming pool, or poling a raft to sitting in a swan-boat in the park? If every rural community would but start a get-together campaign, learning to fight the lure of the city by making the country irresistibly attractive, the country boy or girl would not drift to the city in quest of "a good time." Every rural community should have, either near the school-house or elsewhere in a central location, a properly equipped playground where all could come for social, wholesome play. This would give place for Boy and Girl Scout exhibitions, community field days, pageants and endless other pleasurable and wholesome occasions. The school or church should form a community center for indoor festivities and meetings. Good roads, combined with good-will and a little good work would provide any community with plenty of "good times."

### Overwork of the Country Child

Then we must think of the country child's work. Child labor is not confined to the factory or the city sweatshop. Many a country boy is almost literally "worked to death" on his father's acres. Many a country girl is prematurely worn and weakened by domestic drudgery in an ill-equipped farmhouse. Having toiled from end to end of his father's huge fields, many a boy has vowed that, once escaped, he would never touch a hoe again. Farm chores ought not to be an intolerable burden to a healthy, happy boy or girl. Our federal government has recognized this and has encouraged boys in having their own gardens—so different from father's discouragingly vast fields.

Corn, tomato, canning, pig and other clubs have opened vistas before the eyes of our country boys and girls. In this way, the young people have been led to see that the one who owns a pig or calf, who keeps pigeons, who cans fruit and vegetables, is likely to be far happier, far better equipped for life and far more likely to love and stick to the farm than the boy who toils among the potato bugs all day, or the girl who fetches water and sweeps and washes dishes for farm laborers, with no chance to enjoy the glory of outdoors.

### Religion an Important Factor in Child Welfare

The country church has a triple advantage over the city church. It has a permanent potential congregation. It does not have to compete with a multitude of interests and distractions, and it has all about it in the world of Nature the most powerful of allies. The rural preacher can follow his Master's example and illustrate his sermons from the fields, the mountains and the trees. "Sermons in Stones" are better than any that can be drawn from city pavements, and make an infinitely quicker appeal to children. It is sometimes hard to preserve in a city child the natural sense of reverence, and it is often impossible to give him that love of Nature which is so nearly akin to love of God. But with the country child, reverence may find fresh wonders on every side and love of Nature may blend insensibly into love of the mighty cause back of Nature.

# The Baby's Daily Bath

One of the most interesting tasks for the young mother is to give the baby his daily bath. This is not a fad, but a necessity. The tender skin of the little child does not throw off secretions rapidly, and he must be bathed daily in order to keep well. Some physicians advise that the general bath should not be administered during the first ten days, or until after the cord is separated from the naval. During this period the skin may be kept clean by gentle, warm sponging.

In preparing for the coming of the child, certain equipment necessary and convenient in giving the bath should find place on the list. A large bowl may be used at first, but a regular baby's bath tub soon becomes a necessity. A rubber portable tub is convenient and easy to handle, if circumstances necessitate much changing from place to place. The small tin, or enameled, tub will be most practical in the nursery and will serve until the child is old enough to be put into the regular tub.

If the bath is to be given in the nursery, a table two feet high on which to place the bath tub will save stooping. If the bath is to be given in the bathroom, a wide board fitted over the ordinary bath tub and securely clamped in place will be convenient. No chance should be taken of this slipping, as serious accident may result. Clamps to hold it in place can be purchased for a few cents.

## The Bath Thermometer

A bath thermometer is one of the indispensables. The question of the temperature of the child's bath is of great importance and should not be left to "guess." A floating thermometer costs about twenty-five cents. It should be put into the tub and carefully consulted immediately before putting the child into the water.

## Temperature

The temperature of the room should be noted and brought to 75° or 80° F. The temperature of the bath for the infant should be 99° to 100° F. Gradually this temperature may be lowered and at one year should be 85° to 90° F.

## Soap and Water

Only pure, white castile soap should be used on the baby's skin. Fancy and perfumed soaps should never be used. Skin troubles should be treated by the physician. Only soft or distilled water should be used.

After the bath, all soap should be carefully removed by rinsing several times with clear soft or distilled water. Pat the skin dry, and dust in all the creases with a fine talcum powder.

## Bath Time

The most convenient time for giving the bath will usually be the morning, just before the feeding nearest ten o'clock.

Before taking up the child, the mother should make sure that everything is at hand and that she is herself prepared for her task. A rack, or small clothes-horse, is convenient for baby's garments, towels, etc. The mother should wear a rubber or enamel cloth bath-apron, and over this a soft flannel apron. Placing the child on the bath table, or holding him carefully on her lap, he should be quickly undressed and wrapped in the flannel apron.

## Towels and Wash Cloths

A bit of old linen, cheese cloth, or soft flannel, makes an excellent wash cloth.

A sponge should not be used, as it is unsanitary. Care should be taken not to get soap into the child's eyes. The soapy water should be rinsed off, and the face patted dry with a soft linen towel. Baby's wash cloths should all be of as soft material as possible, and old linen table cloths may well be saved for this purpose. Wash cloths should be boiled before using a second time.

The same wash cloth should not be used for the face and body. A cloth a bit larger will be found more convenient for the body, and it takes but a second to make the change. The child's body should be well soaped, keeping it wrapped in the flannel apron and exposed only for the soaping. Special care should be taken that the flesh creases at the elbows, knees, and about the groins are carefully washed, as these are likely to become inflamed if not kept clean.

Before putting the child into the bath the mother should take one last look at the thermometer floating in the tub. Do not put the child into water that is either too warm or too cold. It is a very simple matter to be accurate in this regard.

### Holding the Child in the Tub

The bath tub should never stand on a stove or heater, and neither cold or warm water should be added to the bath while the child is in the tub. After making sure that the temperature is correct, the blanket-apron may be unfolded and the well-soaped baby lifted into the tub.

When the baby is very small and feeble, it is necessary to hold him in such a way as to support his head. The mother should hold the baby on her left arm, at the same time supporting his head and lifting the feet and legs with the right hand. In the bath, hold the baby with the left arm, using the right hand to carefully rinse his entire body. Then as he rests in the water for a moment, with the right hand quickly slip the bath towel or a piece of soft linen over the flannel bath apron, and the child may then be lifted on to the lap or table wrapped in the bath towel and patted dry. When the body is dry, the bath towel may be unwrapped and a special drying given to the wrinkles and creases of the skin. The skin may be oiled, or dusted with rice powder or a good talcum powder. It is important to apply the powder between the toes, under the arms, to the groins, about the neck, under the chin and behind the ears, at the bend of the arm, and beneath the knees.

A good powder may be prepared by baking ordinary cornstarch to make it sterile. Stearate of zinc or magnesia are also excellent dusting powders.

### The Bran Bath

When the skin becomes rough or irritated, soap should be avoided altogether. Bran baths may be given—about a cupful of bran in two gallons of warm water; let it soak for half an hour before using. The bran should be enclosed in a bag composed of several layers of cheesecloth, and should be squeezed frequently during the soaking. If the infant's skin is broken, cleanse the abraded surface with tepid or soft water, using bits of cotton or cheesecloth; then dry with cotton and apply white vaseline.

While being dressed, the infant should lie across the lap, or on a low table. The clothing should be drawn on over the feet.

# Pop Corn

If every home would keep a supply of pop corn and a popper convenient, fewer nickels would be spent for less wholesome knickknacks and more enjoyable evenings would be spent around the family hearth.

Besides being a source of entertainment, pop corn has considerable value as a food, and when properly prepared for the table, it is superior to many of the breakfast foods now on the market.

For good results in popping, the main requisites are good corn and a good hot fire. In popping, certain precautions may be observed to good advantage.

Do not take too much corn at one time, not more than enough barely to cover the bottom of the popper one kernel deep. Hold the popper high enough above the fire or heat to keep from burning the kernels or scorching them too quickly. The right degree of heat for best results in popping should make good corn begin to pop in one and one-half minutes. This should give the maximum volume increase in popping. If it begins to pop in less time or if a large quantity of corn is put into the popper, it will not pop up so crisp and flaky. If it takes much longer for the popping to begin, the heat is probably not great enough or the pop corn is of poor quality, or there may be other interfering causes, such as drafts of cold air.

To preserve the snowy whiteness of the popped kernels, the flame must be kept from striking them. This can be done by placing a plate of iron or a stove lid between the corn and the fire, if a wire popper is used, or by using a pan popper if popping directly over a flame.

If the pop corn is in first-class condition and the heat properly applied, one pint of unpopped corn should give fifteen to twenty pints of popped corn.

Pop corn is usually popped to be eaten at once, or it may be made into pop-corn balls, crackajack, or other forms of pop-corn confection. A common way of preparing it is by popping and sprinkling it with salt or adding salt and melted butter. Sometimes the popped corn is eaten with milk and sugar like a breakfast food. The parched unpopped kernels when ground like coffee make a very good breakfast food for eating with cream and sugar or for boiling with water and serving like oatmeal. Some pop-corn venders make a palatable preparation by popping the corn in melted butter with salt added.

Dealers who put up shelled pop corn in packages for the retail trade usually have a number of good recipes printed on the outside of the package. Cookbooks also give splendid recipes for making pop-corn confections. The following have given good results:

### Chocolate Pop Corn

2 teaspoonfuls of white sugar
½ cup of corn syrup
2 ounces of chocolate
1 cup of water

Put these ingredients into a kettle and cook them until the sirup hardens, when put in cold water. Pour over 4 quarts of crisp, freshly popped corn and stir well to insure the uniform coating of the kernels.

### Sugared Pop Corn

Make a sirup by boiling together 2 teacupfuls of granulated sugar and 1 teacup of water. Boil until the sirup strings from the spoon or hardens when dropped into cold water. Pour over 6 quarts of freshly popped corn and stir well.

### Pop-Corn Balls

1 pint of sirup
1 pint of sugar
2 tablespoonfuls of butter
1 teaspoonful of vinegar

Cook until the sirup hardens when dropped into cold water. Remove to back of stove, add one-half teaspoonful of soda dissolved in a tablespoonful of hot water, and then pour the hot sirup over 4 quarts of freshly popped corn, stirring till each kernel is well coated, when it can be molded into balls or into any desired form.

Darker balls are made by using New Orleans molasses and the lighter colored ones by the use of maple sirup. Any good sirup or molasses may be used.

# Uncooked Vegetable, Fruit and Salad Recipes

MRS. HARRIET NEWTON

### Cucumber and Plum

Cucumbers ½ cup
Tomato ½ cup
Orange ¼ cup
Plums ¼ cup
Cream Dressing 2 tablespoons

Dice cucumbers, tomatoes, orange and plums. Mix all together with cream dressing and serve in half of an orange shell, upon a lettuce leaf.

### Turnip and Orange

Turnips ¼ cup
Celery ¼ cup
Carrots ¼ cup
Orange 2 slices
Mayonnaise dressing 2 tablespoons

Chop turnips, carrots and celery fine. Cut slices of orange in halves. Mix turnips, carrots and celery with the dressing. Place upon a lettuce leaf and place the half slices of orange around it.

### Pineapple, Tomato and Cheese

Pineapple 6 slices
Celery ½ cup
Tomato 6 slices
Cottage cheese ½ cup
Mayonnaise dressing

Place a slice of pineapple upon a lettuce leaf. Cut slice of tomato into quarters and place point out upon the pineapple. Make cheese and dressing into balls the size of a walnut, and place upon the tomato in the center.

### Pear, Radish and Carrot

Pears 6
Cottage cheese ½ cup
Radishes 6
Celery ½ cup
Carrots ¼ cup
Mayonnaise 2 tablespoons

Cut pears in half. Remove the core. Chop carrots, celery, mix with cheese and mayonnaise. Fill center of pear. Make a flower of a radish and place in center. Serve upon a lettuce leaf.

### Tomato, Carrot and Cucumber

Tomatoes 6
Carrots ¼ cup
Cucumbers ½ cup
Celery ¼ cup
Mayonnaise

Remove center of tomato, make a cup of it. Chop carrots and celery and cut cucumber into small cubes. Mix with mayonnaise dressing, fill the tomato cup. Serve upon a lettuce leaf.

### Pear, Plum and Banana

Pears 6
Nuts ¼ cup
3 plums (small)
Banana, 1 large
Celery ¼ cup
Mayonnaise 2 tablespoons

Cut pear in half, remove the core. Cut in small cubes. Chop nuts and celery, mix together with mayonnaise, fill center of pear. Cut end from a red plum, place in the center and serve upon a lettuce leaf.

### Peach, Nut and Carrot

Peaches 3
Nuts ¼ cup
Celery ½ cup
Carrots ¼ cup
Mayonnaise 2 tablsepoons

Slice the peaches very thin. Chop nuts, celery, carrots, and mix with dressing. Place slices of peaches upon a lettuce leaf and make a small ball of other ingredients and place upon the slices of peaches.

### Green Pepper, Nut and Cucumber

Green peppers, 6 small
Cucumbers ½ cup
Nuts ¼ cup
Celery ¼ cup
Cabbage ½ cup
Mayonnaise 2 tablespoons

Cut tops from peppers and remove the seeds. Chop celery, carrots, cabbage and nuts. Dice cucumbers. Mix all with the dressing. Put in pepper cubes and serve upon a lettuce leaf.

### Peach, Plum and Cherry

Bananas 1 large
Peaches 3
Plums 6 large
Cherries 6
Golden dressing ¼ cup

Cut banana, peaches and plums into small cubes. Mix with golden dressing. Place upon a lettuce leaf and place a cherry in center.

### Turnip, Radish and Carrot

Turnips ¼ cup
Cucumbers ½
Radishes 6
Carrots ½ cup
Onions 2 tablespoons
French dressing

Cut turnips, carrots and cucumbers into fine shreds. Cut onion fine and radishes into strips. Mix all with French dressing and serve upon a lettuce leaf.

# New Recipes

### Rocky Mountain Cake

¼ cup butter
¾ cup sugar
2 eggs
1½ cups sifted flour
½ cup milk
2 tsp. baking powder
½ tsp. vanilla
Rocky Mt. filling

Cream the butter and add the sugar gradually; beat the egg yolks until light and lemon colored and add to the butter and sugar. Mix and sift the flour, salt and baking powder and add the milk and flour alternately, then the vanilla and stiffly beaten egg whites. Bake in layers and spread with Rocky Mountain cake filling between and on top.

### Rocky Mountain Cake Filling

1 cup sugar
½ cup water
1 egg white
¼ cup currants
¼ cup chopped raisins
¼ cup chopped dates
¼ cup chopped figs
¼ cup chopped nuts
¼ cup cocoanut
Vanilla

Heat the sugar and water to boiling, stirring occasionally until the sugar dissolves. Then boil without stirring, until the syrup threads when dropped from a spoon. Pour the hot syrup gradually on the stiffly beaten egg-whites, beating constantly; then fold in the fruits, nuts, cocoanut and vanilla and spread on cake.

### Frosted Date Cakes

1 cup chopped dates
⅓ cup butter
¾ cup sugar
2 eggs
½ cup milk
Salt
1¾ cups flour
3 teaspoons baking powder
¼ teaspoon cinnamon
¼ teaspoon nutmeg
¼ teaspoon ground cloves
Boiled frosting

Cream the butter and sugar; add eggs well beaten. Sift flour, spices, baking powder and salt together and add to above mixture, alternating with the milk. Beat well, then fold in the chopped dates and bake in muffin tins about 25 minutes. Cover with boiled frosting and place one-half date on top.

### Steamed Chocolate Pudding

½ c. sugar
1 egg
1 tbsp butter
3 tbsp. milk
1 c. flour
1 tsp. baking powder
½ cake Baker's chocolate
Vanilla

Beat the sugar and butter together, add beaten egg. Sift the baking powder and flour together and add, alternating with the milk. Add melted chocolate and vanilla. Steam two hours and serve with sauce.

### Sauce

1 c. sugar
¼ c. butter
1 egg yolk
1 tbsp. cornstarch
1 c. boiling water

Stir sugar and cornstarch together well, add butter and beaten egg yolk, then add the boiling water very slowly. Cook in double boiler until thickened and just before serving add one well-beaten egg white.

### Orange Marmalade

9 oranges
2 lemons
Sugar
Water

Slice oranges and lemons very thin. Cover well with water and set away for 24 hours, then boil slowly until tender. Set away for 24 hours again. Measure and add equal parts of sugar and pulp and cook about one hour, put in glasses and cover with paraffin.

# MEDICAL PROGRESS

# Ivy Poisoning

Dr. F. W. Wright, chief Health Officer of the State of Connecticut, contributes to the Monthly Bulletin of the Department of Health, the following interesting and practical article about ivy poisoning, which will be particularly appreciated by people living in the rural districts, at this season of the year:

"The fact that poison ivy grows very plentifully in certain vicinities, especially along the seashore where so many go for outings or vacations, and that large numbers are yearly affected by the poison, leads us to believe that a short discussion of the subject is timely and may be of value to those susceptible to the poison.

"A recent article in the United States Public Health Reports, under date of February 27, 1920, covers the subject very fully and we shall quote from this article very freely without further acknowledgment.

"While the poison of ivy is not fatal, the annoyance and discomfort is great and in some instances so pronounced that the persons affected are prevented from attending to their usual vocations for long periods. Taking into consideration the general prevalence of poisonous ivy of the various varieties and the vast numbers affected, the economic loss annually must be great.

"Poison ivy or mercury, as known to many, grows as trailing vines or low shrubs and is recognized by its three leaves. It is frequently designated as three-leaved ivy. The leaves are long and narrow, dark green on top and lighter colored on the lower side. When once known it is easily distinguishable and the most careless observer can tell it at a glance from the harmless vines or shrubs. Poison ivy grows along fences, walls, rocks and even climbs trees. It grows in pastures, woodlands and thickets, along roads and streams. Often it is allowed to flourish in door yards and even in public parks.

"Poison ivy causes irritation of the skin through some principle which can be extracted from the leaves, roots, flowers and green fruit. The minutest quantities of this produces the irritation. The slightest contact with the leaves or roots may be sufficient to cause the poison and it may be transferred from one person to another by contact, by clothing or handling utensils that have been used by a person having the eruption, or having brushed against the plants. It is claimed by many that those particularly susceptible may become infected by being in close proximity to the growth. It is probable that in such cases the poison is conveyed by wind-borne pollen, which may be carried comparatively long distances. The writer has known many instances where the smoke from burning plants has caused the irritation. The plant is said to be a violent irritant and narcotic poison when taken internally. Many animals, especially cattle, eat the foliage with apparent impunity. Many regard themselves as immune to action of the poison, and it is probable that some do possess a strong resistance, but it is not likely that any are absolutely immune. The time between exposure and the appearance of symptoms of the poison vary from a few hours to several days, probably depending upon the susceptibility of the person, the parts affected, and the amount of exposure. The parts most frequently attacked are the hands, forearms, face and other exposed parts. It is frequently conveyed to other portions of the body by the hands or clothing.

"Burning and itching are the first symptoms of the trouble, followed by an inflammation of the skin and a fine papula rash that often becomes vesicular. There is a strong desire to scratch, which gives but slight relief and often tends to aggravate the irritation and is likely to spread the poison to other parts. As the inflammation subsides, there is more or less desquamation of the skin.

"Persons known to be susceptible to the poison should avoid localities where it grows, but it can be handled with impunity if thick or rubber gloves are worn and care is taken that the ivy or dust does not touch any of the exposed parts. In removing the gloves, it is necessary to be careful that the bare skin does not come in contact with the poisonous material harbored upon the outside of the gloves. Lest the gloves later cause trouble, they should be thoroughly washed in hot water and soap.

"If one is known or suspected to have been subjected to the poison, prompt and thorough washing with soap and hot water will almost surely prevent the irritation, as the poison penetrates the skin slowly. To be effective, the washing must be done as soon after exposure as possible. Alcohol diluted with an equal part of water may be used effectively. Either washing with soap or alcohol must be thorough or it will be useless. Many remedies have been tried with more or less success, but it is to be remembered that what will help one person may not another, and that different stages of the irritation require different treatment. If the prophylactic measures mentioned above do not accomplish the desired results, it is better to consult a competent physician, as if allowed to run, very annoying results may ensue.

"There are many homely and unofficial remedies that are often effectively used as both preventive and curative measures. The writer has frequently seen ordinary household ammonia both prevent and cure the irritation. At first this should be diluted with an equal part of water, and if well tolerated, the strength may be increased until no dilution is necessary. A solution of bicarbonate of soda frequently gives temporary relief from the burning and itching. A saturated solution of table salt will give the same result. In fact, nearly all alkalies give relief and are in a measure curative. These remedies are mentioned as possibilities, but professional advice is recommended by us."

The editor desires to add to the above excellent article by Dr. Wright a suggestion which will certainly be appreciated by any person who has the misfortune to suffer from ivy poisoning and who will take the trouble to make a practical application of the simple treatment suggested.

The stinging, burning, smarting pain connected with ivy poisoning is often so intense as to become real torture, especially when a large skin area is involved.

Hot water is almost a panacea for this distressing symptom. The water must be applied very hot. It may be applied by cloths dipped in water at a temperature of 120°-130° F.; or, water at a temperature of 112°-115° F. may be gently splashed upon the affected part.

A good plan is to draw into a tub a quantity of hot water, making a temperature of about 120°, adding more hot water as the water cools, so as to maintain this temperature. The affected part is held out over the tub, and with a large basin water is dipped from the tub and splashed upon the affected surface, first in very small quantities, then in larger quantities, as a tolerance for heat is developed. The temperature of the water must be as hot as possible without actually scalding the skin, or not less than 115°-120° F. The relief is almost immediate, and usually lasts for several hours, as a whole night or half a day.

The benefit derived from hot water applications is prolonged and increased by the application to the affected surfaces of lanolin cream, containing carbolic acid and menthol. A good formula is the following:

| | |
|---|---|
| Lanolin | 2 drams |
| Boro-glycerine | 1 dram |
| Cold cream made with white vaseline | 6 drams |
| Carbolic acid | 10 drops |
| Menthol | 10 grains |

This ointment should be applied immediately after the hot water application. The parts may be thoroughly washed once a day with resinol soap, using only soft water.

# New Light on Vitamins

At a recent symposium on vitamins in New York City in which the leading physiologists of this country participated, Dr. T. P. Osborne of Yale called attention to the fact that the intake of vitamins is quite as important as the intake of food proper. He found that animals gained in weight when the food intake was decreased, provided the vitamin intake was increased, showing the remarkable influence of vitamins upon metabolism. Emphasis was laid upon the fact that persons whose diet is restricted should be given an increased quantity of the water-soluble B vitamin. Fortunately this important element may be readily obtained in such foods as the tomato and spinach, which are poor in other food substances. Dr. Osborne also mentioned that molasses is a better source of sweet than cane sugar, for the reason that it contains the original vitamin found in the juice of the cane. Cattle food is richer in the water soluble B vitamin than is human food. The deficiency may be easily remedied by the liberal addition of greens to the diet. Without a sufficiency of the water soluble B vitamin, it is impossible for the metabolism of the body to be carried on in a normal way. Metabolism is a term which comprehends various forms of cell activity carried on in the body. Oranges, lemons, and grapefruit are very rich in the water soluble vitamin, containing as much as does milk. The tomato is richer in this vitamin than any other vegtable, spinach comes next, then carrots, turnips, cabbage and onions. Yeast is rich in vitamins.

Dr. McCollum calls attention to the fact that muscle meats, that is, lean meats, are deficient in all three of the known vitamins; the antiscorbutic, the anti neurotic, which prevents beri-beri, and the fat-soluble A, the deficiency of which gives rise to disease of the eyes. Professor McCollum stated that a diet consisting of lean meat and any mixture whatever of seeds, roots, tubers and legumes is never satisfactory. Such a diet is always lacking in essential vitamins. There is great danger of injury, due to improper diet, in asylums and other institutions where the inmates are fed on a set and rather meager and monotonous diet. In an asylum for negro children not a single child in 251 was found to be normal.

McCollum calls attention to the fact that infant mortality is a very sensitive indicator of the sufficiency of the dietary. He has noticed that the young which have been fed upon a diet deficient in vitamins do not grow to maturity. They may get along fairly well for some weeks or months but finally die prematurely. This fact suggests one cause, the importance of which has perhaps been heretofore overlooked, of the enormous infant mortality in this country, amounting to more than three hundred thousand, or one-fifth the total deaths.

## Tomato Juice to Prevent Scurvy

Drs. Hess and Unger have demonstrated that tomato juice is highly efficient as a means of preventing scurvy. Its value is slightly diminished by boiling. Carrots are also valuable but less so than tomatoes. Old carrots that have been cooked have little value as compared to new carrots, which bear cooking better. The strained juice of canned tomatoes is a very effective antiscorbutic, and is especialy adapted for use in institutions on account of its cheapness and ready availability. It may be given to very young infants without injury.

## A Serum Cure for Anthrax

It is important that the public should know that recovery from anthrax, or malignant carbuncle, a disease for many years considered absolutely incurable, is now practically certain if application of the remedy is begun sufficiently early. Five cases have already been cured at Bellevue Hospital, New York City, by the injection of serum prepared by the United States Department of Animal Industry.

## Masks in Influenza

Some discussion has arisen as to the efficiency of masks as a protection in influenza. Josefson, of Stockholm, reports extended experience in the use of masks from the beginning of the influenza epidemic. He states that none of the nurses in the influenza wards contracted the disease. They were scrupulously protected by masks. In the adjoining ward, where masks were not worn, some of the nurses were down with the disease all the time.

## Body Changes Due to Age

Metchnikoff made a careful study of the effects of age upon the tissues of the body. He summed up all these changes as being a sort of sclerosis, which may affect the brain, kidneys, liver, bloodvessels and other organs:

"The bones grow thin and brittle with advancing age, the tissues atrophy and become replaced by hypertrophied connective tissue, especially in the arteries. In the brain and nerves, the cells which perform motor, sensory, and intellectual functions give place to lower or neuroglia cells. The liver cells recede before the invasion of connective-tissue cells. A similar condition takes place in the kidneys and other organs. In short, old age is a struggle between the proper functional cells of the organ and the simple connective-tissue elements, and the latter are the conquerors. Phagocytes, too, aid in the process, as is seen in the whitening of the hair. Normal hair is full of pigment, but at a certain period the cells of the medulla become active, and devour the pigment granules within reach, and so the hair, robbed of color, gives the first manifestation of age. The increasing porosity of the bones is likewise due to the absorpton of the osseous lamellæ by phagocytes."

## The Banana

Recent experiments by Sugiura and Benedict show that the banana is deficient in protein and in the water-soluble vitamin. The banana is an excellent food, but must be used in connection with other foods, such as nuts and the soy bean.

## Tuberculous Fowls

It has long been known that barnyard fowls as well as birds of various species are highly subject to tuberculosis. The form of the disease which occurs in birds is termed avian tuberculosis.

A surgeon living in Stevenson, Minnesota, recently reported to the *Journal of the American Medical Association*, that in dressing a chicken, bought in a nearby market, he observed that the liver was unusually large, and on examination found both liver and spleen were tuberculous. Microscopic examination showed tubercle bacilli to be present.

According to the *Journal*, inspection of fowls has received little attention from the United States government, and probably for the reason that a very large force of inspectors would be required to examine every dressed chicken sent to the market. It is doubtless true, as suggested by the *Journal,* that "almost any housewife would notice marked tuberculosis in the livers of poultry being prepared for the table." But it is also very unlikely that the average housewife would recognize the significance of the appearance characteristic of tuberculosis or would know of the danger involved in the eating of such flesh. The idea of eating a consumptive hen is certainly by no means appetizing.

It seems to GOOD HEALTH about time that Uncle Sam should get busy in this inspection business and see that every American citizen who insists on making his stomach the receptacle of dead animals may at least have the consolation of knowing that he is eating what he paid for, and not swallowing a miscellaneous assortment of disease germs that he may afterward have to pay a high price to get rid of.

## Fasting Experiments

Dr. Carlson has recently conducted observations on a subject who fasted for fifteen days, taking no food, and then continued the fast for eight days longer, taking in place of food, cotton fibre.

The observation showed that the hunger contractions of the stomach continued during the entire period, gastric juice was present and its acidity tended to increase.

## Anthrax from Shaving Brushes

Anthrax is one of the most fatal of all known diseases. This malady, sometimes called malignant postule, occurs most frequently in sheep.

The Ministry of Health of London has recently announced that Japanese shaving brushes are found to be a source of infection with anthrax. Two fatal cases have already occurred.

## A Vegetarian Orphan's Home

It is reported that the home of Tolstoy, "Jasnaja Poljana," under the direction of his youngest daughter, is now utilized as an Orphans' Home. Eight hundred orphans are already there, and the number is constantly increasing.

The Home is to be conducted on the plan of the Junior Republic. Children will be taught agriculture and various trades under the direction of experts. They will be reared in accordance with the principles of the simple life as expounded by Tolstoy in his works. Meats of all sorts are to be excluded from the dietary.

## Food from the Agave

A recent study of the leaves of the agave shows that the leaves contain a considerable amount of nutritive material. The dried leaf contains more than twenty-five per cent sugar, an equal quantity of other carbohydrates, sixteen per cent malic acid, and fifteen per cent of salts, besides a considerable percentage of pectin.

It is said to be possible to prepare from the juice of the leaf a sweet, slightly acid marmalade suitable for human consumption.

## Energy Expenditure in the Work of Digestion

Benedict and Carpenter have recently published the results of experiments determining the amount of energy expended in the digestion of food. These observations show that the energy required for the digestion of protein is double that required for the digestion of carbohydrates and six times that required for the digestion of fats. A diet rich in protein requires the expenditure of 12 per cent of the caloric value of the food in its digestion. All foods increase expenditure of energy; in other words, stimulate cell activity. After a hearty meal, the expenditure of energy was increased 40 per cent above that of the fasting body at rest. The increase after such a meal amounted to 20 per cent during eight hours.

# PUBLISHER'S LETTER BOX

### Twenty-two Years a Faithful Follower of "Good Health" Teachings

Geo. L. Stanley,
*Ashtabula, Ohio.*

"Have been a reader of Good Health about 22 years and an abstainer from the use of flesh foods about the same length of time. I will be 76 years old in August, 1920, and am in active work as a contractor and mentally and physically able to do an average man's work, largly as the result of reading Good Health and your books. I have never used alcoholic beverages, tea or coffee or tobacco. Have taken a full body tonic bath mornings when convenient. My diet is brown bread, vegetables and peanut butter."

### A Generation of "Good Health"

T. P. Brinegar,
*Rulo, Nebr.*

"The Good Health has been coming to me or some member of my family for a long time, off and on for a generation, and I appreciate it above all the health literature I get, or have a chance to read, and I have read a great deal in my time."

### The Best Health Journal

C. A. Carneiro Leao,
*Rio de Janeiro, Brazil, S. A.*

"I have been a reader of your good magazine for four years, and could not get along happily without your excellent health publication, the best I have ever read or seen."

### The Young Need It

B. B. Bert,
*Detroit, Kan.*

"I think a great deal of your paper and think everybody should read it, especially the young."

### Twenty-five Years a Subscriber

S. H. Bishop,
*Stanfordville, N. Y.*

"I have been a subscriber to Good Health for about twenty-five years and hope to continue it as long as I live. My continuous good health during all this period is due, without doubt, to what I have learned from this magazine."

### A Healthful Voyage

Louis Fiesinger,
*Norwalk, Ohio.*

"Again I take pleasure in paying my passage for a yearly voyage on the staunch ship Good Health. I am mindful of, and appreciate, the many helpful sanitary and hygiene suggestions of its able and skillful medical mariner, Dr. J. H. Kellogg, and anxiously await its monthly appearance."

### A Permanent Subscriber

H. E. Rhoads,
*La Jolla, Calif.*

"I have been a subscriber to your most excellent magazine for a long time, and expect to continue taking it the rest of my life."

### Spreading the Good Health Gospel

Ella T. Griffith,
*Lawrenceville, Ill.*

"I enjoy your journal so much that I don't want to miss a single number, and am doing all I can to get subscribers in order to help others."

### Contains Useful Information

Miss M. E. Hill,
*Pasadena, Calif.*

"Good Health is a magazine full of useful information. I feel I cannot do without it."

GOOD HEALTH

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## EDITORIAL DEPARTMENT

# Professor Hawk Advocates Bad Cookery and Unpalatable Food

Here comes that sensational Philadelphia professor again with some new experiments in which it is claimed that unpalatable food showed almost as good digestibility as palatable food.

For two days the experiment squad ate food which was made uninviting by being mixed together and served in dishes smutted with animal charcoal, and in the midst of disgusting odors produced by indol (an extract of feces), which was placed under the table.

Although the professor admits that in the case of one subject the food was vomited immediately after being eaten, he maintains that in the main it was utilized practically as well as palatable food, the deficiency of utilization being only one per cent in the case of the unpalatable food.

Really, this is a bit too much. The professor is determined to smash all our established notions of digestion and dietetics. He should at least leave us a chance to relish our meals, or the dinner table may lose its popularity as a place for family and fraternal rendezvous. We can't believe that Professor Pawlov was mistaken when he noted that his experimental dogs made gastric juice when they relished the food he gave them and refused to make it when the food was unattractive.

Whoever felt his mouth water at sight or smell of repulsive viands? It's against nature.

The bad psychological effect of unpalatable food was clearly shown in the case of one student who in spite of the fact that he knew the food was not unwholesome and that the whole thing was simply an experiment—in other words, that the unattractiveness was a camouflage and not an indication of noxious properties—had his digestion so upset that he vomited.

It should also be noted that there was a depreciation of one per cent of the utilization of the unpalatable food. If the utilization depreciated one per cent in two days, what might have been the result if the diet had been continued for two hundred days? Or, in other words, if the unpalatable diet had been eaten daily for an indefinite time, the chances are about a hundred to one that in less than a month every member of the squad would have been suffering from total indigestion, or at least total inability to keep the disgusting food in his stomach. To make the experiment parallel with the case of a man obliged to eat unpalatable food served in dirty surroundings, day after day, week after week, the experiment should have been continued at least a month.

It must be noted that the case of the professor was entirely different from that of the family at the mercy of a bad cook or a slack housekeeper. The professor was hunting material with which to make a new sensational article for the public prints. The anticipated pleasure of exploiting a new heresy was so delightful that it actually altogether overshadowed the disgusting camouflage and made the food agreeable—sugar-coated the bolus, so to speak, with psychologic saccharine.

But why should the professor or any one else want to prove that unpalatable food is just as good as palatable food? Does he want to encourage bad cookery and untidy housekeeping? Is anything to be gained by discounting the value of culinary skill and the attractive serving of meals?

It is a sad spectacle when a university professor degrades his office by becoming a sensation monger.

# An Old Author Against Coffee

Brillat de Savarin, an eminent French jurist and author of the celebrated work, "Physiologie du Gout" (Physiology of Taste), strongly condemned the use of coffee.

M. Savarin was born in 1755. He died in Paris in 1826. He was a life member of the Court of Cassation, after having spent a couple of years in exile in this country during the French Revolution.

M. Savarin said: "Every father and every mother should strictly forbid their children to take any coffee, unless they wish to see them shriveled up, bony and withered little things before they are twenty years old.

"I am one of those who have been obliged to give up the use of coffee."

Savarin tells how that having to do some important work for the Minister of Justice be had to sit up all night. In order not to fall asleep he drank two cups of coffee. He then found he did not have to do the work, and tried to go to sleep. He said: "After being two hours in bed, I felt more wide-awake than ever. I was in a very lively state of mental excitation, and I pictured to myself my brain as a mill of which the wheels were constantly going without having anything to grind. I therefore passed the night without sleeping and without feeling sleepy for a single moment. I arose the next morning and passed the whole day in the same state. Finally, on retiring to rest the second day at my accustomed hour, I concluded I had been forty hours without closing my eyes."

This experience was sufficient to convince the jurist that coffee was a nerve poison. He accordingly renounced its use forever.

Thousands of men and women are suffering from sleeplessness, nervousness, chronic fatigue, indigestion, hardening of the arteries, constipation and various other disorders which are caused, perpetuated and continually aggravated by the habitual use of coffee.

# The Intestinal Filter

One of the most important of the body's defenses is the mucous membrane of the intestine, which is endowed to a high degree with the power to exclude poisons. The mucous membrane possesses a wonderful selective faculty by which it chooses from among the various materials presented to it those which have a nutritive value and are likely to prove of use to the body, while excluding harmful and useless substances.

Recent scientific researches have shown that even the ordinary foodstuffs which, when completely digested, are the means of reinforcing the energies of the body and building up its wasting tissues are, in their ordinary state or when half digested, capable of producing highly poisonous effects when introduced directly into the blood, and so brought in contact with the cells of the body.

The mucous membrane when intact and in a normal condition presents an insurmountable barrier to crude and undigestible foodstuffs and to the great majority of poisons, especially those of vegetable origin. It is this fact which renders it possible for a person who has been bitten by a rattlesnake to suck the poison from the wound without entailing the risk of poisoning by the absorption of the venom through its contact with the mucous membrane of the mouth. Mineral or crystalline poisons, if soluble in water, pass readily through the mucous membrane; but the risk of injury from this source is very small compared with the danger of injury through absorption of the many thousands of organic and non-crystallizable poisons with which we come in contact.

If the mucous membrane is abraded, ulcerated or even irritated and congested, this power of defense is largely or completely lost. The healthy mucous membrane affords very efficient protection against the entrance of bacteria into the circulation, but this is not true of the diseased or congested mucous membrane. The mucous membrane which is the seat of colitis, or chronic inflammation, or which is ulcerated or irritated and congested by the frequent use of mineral waters or laxative drugs, has lost its protective power. The defense is broken down, and germ poisons readily find their way into the blood and, circulating throughout the body, produce general autointoxication or toxemia, and give rise to infection at especially vulnerable points where the germs and germ poisons are likely to be concentrated, as in the gall bladder and the bile duct, the pancreas, the kidney and the bladder. The writer recalls a case in which colon germs were found in great numbers in the urine, causing very distressing bladder pain. Aid had been sought in different parts of the United States, but without success. The discovery and cure of an ulcer in the rectum was followed by the prompt disappearance of the colon bacillus from the urine and the speedy recovery from the gall-bladder difficulty. It is the writer's opinion that in the majority of cases in which bacteria are discharged in the urine, and in which they are not due to an infection of the bladder or urinary tract, the original source will be found to be an infected intestinal mucous membrane. In most cases, the infected area is located in the left half of the colon, though not infrequently the entire colon is affected.

A diseased condition of the mucous membrane of the colon generally takes the form of colitis, and is almost universally found present in cases of migraine, or chronic headache. This condition is found in a very large proportion of cases of neurasthenia, in anemia, particularly pernicious anemia, and in the majority of chronic diseases of whatever character. It has been regarded as almost intractable in former times, but is now better understood, and cases are very rare that may not be practically cured by changing the intestinal flora, regulation of the diet and the application to the colon of such local measures as will keep it free from putrescent material, and the diseased surfaces in a fairly healthy condition.

# The Natural Diet of Man

It is easy to determine the natural diet of an animal by studying its eating habits when in a wild or natural state, for the reason that animals are guided by unerring instincts which instruct them what to eat and lead them to avoid eating those things which are not naturally adapted for their sustenance, and which are hence unwholesome for them.

In the feeding of wild animals in captivity, and even domestic animals, man recognizes the imperative importance of these natural or instinctive guides, and seeks by careful study, experiment and observation to ascertain what is the natural diet of each species of animals.

The experienced stockman is highly educated on the subject of animal dietary. He knows exactly how to feed a horse so as to produce the largest, strongest, healthiest and most enduring animal. He knows exectly how to feed a pig in such a way as to secure the greatest growth in the shortest length of time, with the smallest outlay of labor and cash. He knows how to feed cows so as to produce the largest amount of milk or milk of the finest quality, and how to feed hens so as to secure the largest number of eggs. He has secured this knowledge by long, laborious effort, observation and experiment; but with reference to the feeding of himself or the members of his family, the average man, even the average physician, is lamentably ignorant.

Some years ago the writer, in talking with a bright country lad of eight or nine years, learned that the lad was the owner of some rabbits, and the following conversation ensued:

*Writer.*—"What do you feed your rabbits?"

*Boy.*—"Grass, lettuce, potatoes—almost anything."

*Writer.*—"How much meat do you give them?"

*Boy.*—"I don't give them any meat."

*Writer.*—"But you give them a bone once in a while, don't you?"

*Boy.*—"No, indeed. I never give them meat or bones."

*Writer.*—"Why not?"

*Boy*—"Rabbits won't eat meat. Dogs gnaw bones, but rabbits don't."

*Writer.*—"But why won't the rabbits eat meat?"

*Boy.*—"Because it ain't good for them, of course."

*Writer.*—"Then rabbits know what is good for them to eat, do they?"

*Boy.*—"Of course they do."

*Writer.*—"Do you know what is good for you to eat?"

*Boy.*—"No, I don't believe I do."

*Writer.*—"Does your father know what is good for a boy or a man to eat?"

*Boy.*—"I'm sure he don't, because he said the other day he had eaten something that hurt him, but he didn't know what it was."

Even the small boy recognizes his inferiority to the lower animals in the knowledge of dietetics.

Man has existed for so long a time under unnatural conditions of life that he has lost his instinctive guides, and instead of eating those things that belong to his particular class, he has acquired artificial tastes and appetites, which lead him to eat almost everything that any animal eats, including many things which the more intelligent animals positively refuse to eat, unless pressed by direst hunger.

In fact, some things which are a part of the daily bill of fare of the average civilized man, most intelligent animals and millions of uncivilized men would absolutely refuse to eat, preferring even death in the absence of other food. Even savage man finds it necessary to appeal to his humble forest companions for information regarding the suitability of foods with which he is not acquainted. This is true even of the pigmies, probably the most primitive of all existing races of men, who live exclusively upon the products of the forest.

Dr. Giles, a famous African explorer who visited these curious people, told the writer some years ago that when he asked the chief of the pigmies, "How do you know what to eat when you visit a new forest?" the quaint little chieftain replied:

"When I find a new nut, I put it where a monkey can see it, then I hide and watch the monkey. Pretty soon he picks up the nut, smells it, tastes it; and then if he eats it, I eat it. If he drops it on the ground, I know it is poison and avoid it."

The pigmy has made an important discovery to which the average civilized man has not yet attained. He has found that the safe way in diet is to try it on the monkey. He submits his bill of fare to his forest relative, whose knowledge of dietetics is found to be greater and more reliable than his own, and accepts his guidance. We are gradually finding out that the instinctive wisdom possessed by creatures which have not been perverted by the caprices of misguided intelligence or the compulsion of adversity or emergency, is infinitely wiser and safer as a source of dietetic guidance than human intelligence.

Much more valuable information could be obtained by sitting at the feet of some wise old chimpanzee and watching him eat than by reading all the books on dietetics ever written. Even a pig—just an ordinary, stupid pig—knows more about dietetics than any college professor. This was proved some years ago by an experiment made by Professor Evvard, of the Iowa Agricultural Experiment Station.

Ordinarily, the pig doesn't have a chance to choose his food, but is expected to eat anything that is thrown to him in his pen. It occurred to the Professor to give the pig a chance to select his food, and so there were placed before him all the different things that any animal needs, in simple, unmixed form, and the pig was permitted to make his own selection and to do the mixing. Even the determination of the quantity required to satisfy its needs was left to the pig's judgment. The result was the finest porker ever seen. The Professor, himself an expert pig dietitian, confessed that the pig had outdone him, by a long distance, as a caterer.

Professor Osborne, of New Haven, in conjunction with Professor Mendel, of the famous Sheffield Scientific School, repeated the same experiment with rats, and with like results. There is no longer room for doubt. Nature knows, but man has so long closed his ears to Nature's infinitely wise, guiding admonitions, that he has become deaf to her counsels. He can no longer hear her suggestions, and wanders about in a maze of ignorance, falling into bottomless abysses of mishap and misadventure, ever sinking to lower levels of depravity and degeneracy in matters dietetic, until he has become a veritable Cyclops, the devourer of all devourers, the most misguided and denatured of all living creatures.

The zoologists have divided the animal world into families and classes, basing their classification upon structural relationships. So closely dependent is function upon structure, that the animals thus grouped together are naturally found to possess various common characteristics in their habits, particularly in relation to diet. For example, various members of the horse family—donkeys, quaggias, zebras, horses—all follow the same bill of fare. If a new horse were discovered, there would be no question as to what it should be fed. It would be accepted as a matter of course that he should eat the same food as other horses. No one would think of trying experiments upon him to see whether or not he could be made to eat beefsteaks or fish or eggs or Bologna sausage. All the bovines eat grains and all the felines are meat eaters. No one would think of feeding corn or twigs to a newly discovered cat, or tossing a bone to a newly discovered sheep. Since man can nowhere be found in a really natural state, our only means of finding an answer to the question, What is man's natural bill of fare? is to ascertain, if we can, to which one of the numerous families of animals he belongs. Then, from our knowledge of the eating habits of these kindred animals, we may ascertain what is man's proper bill of fare. Fortunately, no room is left for conjecture upon this subject, for the scientists are unanimous in placing man in the very distinctly characteristic, as well as very old and respectable, family of animals known as *primates*.

One of the most striking characteristics of this ancient family is the possession of hands. Every member of this family has hands with five digits and feet with five toes, arm bones, leg bones, pelvic bones, spinal column, skull bones and teeth, all much like man's; and all animals of the primate class are so unmistakably similar that there can be no doubt of their kinship; and the resemblance is not simply in the appearance of the bony structure. There is a wonderful likeness of unity and plan in the structure of the brain, stomach, intestines, liver, heart, lungs, kidneys, nerves and muscles.

The primates are all fruit- and nut-eaters, in whatever part of the world they are found. Primates adhere to the family bill of fare. The gorilla, reigning king of beasts in the forests of the Congo; his somewhat lesser relative, the chimpanzee, which tenants a wide area of the Dark Continent; the orang-utan of Borneo; the gibbon of South America and, diversified as they are in form and habitat, are all equally circumspect in their adherence to the diet of nuts and fruits, tender shoots, soft grains, with now and then a bird's egg, foods which Nature has prescribed as the primate's bill of fare.

If, then, we wish to ascertain what is man's natural diet, we need only inquire to which of the various groups of animals he belongs. The answer will be found in any school text-book of physiology. Man is a primate. Indeed, he is the primate of primates, possessing in the highest perfection the special characteristic of the primates, the most perfect hand which Nature ever made.

Having learned that man is a primate, we scarcely need to inquire further for an answer to the question, "What is the natural diet of man?" which is the subject of this article; but it is interesting in this connection to note the fact brought out by Professor Elliott, the noted English zoologist, who, in his masterly work, "Prehistoric Man," tells us that in the Eocene period, when the earliest forerunners of the human race made their appearance, not only these primitive monkey men were fruit- and nut-eaters, but that all mammals adhered to the same bloodless fare.

Says Elliott: "On the bushes by the rivers and along the shore there were all sorts of fruits and nuts. For the subsistence of our lemur-monkey-man in the early stages of evolution, what fruits would seem *a priori* most suitable?

"I think that one would select the banana and bread-fruit. Ancestral forms of both were flourishing in the Eocene. Many other fruits with which man has been afterwards continually (perhaps one might venture to say *most intimately*) associated occur at this period. These are, most of them, found in so many places that one is apt to think they were then of world-wide distribution.

"In the temperate brushwood and on river-sides, acorns, hazel-nut, hawthorn, sloe, cherry, and plum might be found. Here and there he might alight upon a walnut or almond; figs also of one kind or another seem to have been common. Palm trees existed, and some of them were of enormous size.

"If the idea of climatic and other conditions which we have tried to express is at all correct, there ought to have been many bulbs; but these would seldom be preserved as fossils, for they would grow in drier lands away from the river banks. Birds, who had not yet learned any special fear of mankind, would nest in the bushes and roost in the branches. There is nothing to show whether the honey-ant, termites, and the honey-bee existed in the Eocene. With honey, in addition to the other items given above, the lemur-monkey-man could have found every article of diet which is of importance to the lowest races of mankind. A Yahgan, Bushman, or vedda, would consider a land like this a paradise. *Moreover, there was not, so far as we are aware, any carnivorous creature in the Eocene period, or one which might have been a serious enemy."*

This remarkable statement by Professor Elliott shows us that the primates, in following a frugivorous diet, are simply adhering to the bill of fare common to all mammals, which were wholly nourished by the products of the vegetable kingdom. Lions, wolves and other carnivorous animals represent renegade and degenerate tribes or races of animals that, through the scarcity of their natural food or other compelling circumstances, have been led to abandon their original diet and to adopt eating habits wholly foreign to their primitive progenitors in Eocene times.

It is evident, then, that so far as man has become an eater of flesh, he has followed in the steps of degenerate and predatory beasts, creatures that are far removed from him in structure and wholly outside his biologic class, instead of the example of his nearest relatives in the animal kingdom, members of the same biologic group, the wonderful primates, the most intelligent and most human-like of all existing animal forms.

# They Like It

A certain Professor Matherly, of Georgetown College, Kentucky, evidently a confirmed devotee of the filthy weed, defends tobacco on the ground that those who use it like it. "True," he admits, "their taste for it has been cultivated or acquired. Instinct played no part in the matter. They did not take to the stuff as a duck takes to water. They did not come into the world with the habit in full bloom. They had to learn it, and ofttimes the learning was at the expense of nausea and disquietude of the stomach. But whether they learned the habit with ease or with difficulty, the important thing to remember is that they learned it."

The Professor has missed the mark. The important thing to remember is not that the tobacco slave has learned to like it, but that he had a hard time learning to like it. The unpleasant symptoms which they experienced were simply Nature's protest against the insult inflicted upon the body by subjecting it to the influence of tobacco. Our tobacco-loving friend seems to realize this fact, since he adds:

"That tobacco has its harmful effects upon the body may be true. Its calumniators may be right in all they claim; yet its supporters like it. Their bodies seem to build up an antitoxin to counteract its evil influence."

Altogether too much emphasis is laid upon the fact that the tobacco user likes the weed. The fact that a man likes whiskey does not lessen its power to produce delirium tremens and to lead him to a drunkard's grave. An appetite can be acquired for almost any loathsome or pernicious thing, but Nature does not, as the Professor intimates, "build up an antitoxin to counteract its evil influence." There is no antitoxin for tobacco. The apparent immunity produced by usage is apparent only. The deadly effect upon liver, kidneys, nerves and other vital organs is not decreased by usage, but instead is cumulative.

J. H. Kellogg

# Where Manna Grows in America

One of the most striking of the experiences of the children of Israel, as appears in the record of their travels from Egypt to the land of Canaan, is the account of the manna upon which they fed in the desert.

Manna, or mannite, is a variety of sugar which may still be gathered from certain bushes which grow in the Sinai desert. The writer was able to purchase a small quantity of this interesting product when visiting Constantinople some years ago. It has only recently been discovered that manna is also produced in this country. Mr. Francis Dickie gives the following interesting account of American manna in *American Forestry* for March. According to Mr. Dickie, the Indians of British Columbia have for many years "had a white sugar of a very rare and high quality, a sugar derived from the strangest and almost unbelievable source—from the foliage of the Douglas fir-tree, growing in certain districts in the Province of British Columbia, Canada. Yet, remarkable as this botanical phenomenon is, the existence of sugar in such an unusual place as the foliage of a coniferous tree seems to have entirely escaped the attention of all the white traders, explorers, surveyors, missionaries, and hunters who passed through the regions where it is found. At least no mention of it has ever come to light; nothing seems to have been written of it by those early pioneering whites who travelled through the region where the trees produce this sugar; and, undoubtedly, had these men known of it, they would most certainly have made some mention, because of the very unusualness of the occurrence.

"So, in spite of the fact that this sugar has been known to and used by the Indians for a great many years, it is only now that the following interesting scientific facts of this phenomenon in the plant world are made available through the investigations and experiments of Prof. John Davidson, botanist in charge of the University of British Columbia, Vancouver, who has recently made a careful study of the sugar deposits on the fir, and the conditions under which it is formed, by visiting some of the principal regions where grow these sugar-bearing trees. Assisted by James Teit, of Spence's Bridge, British Columbia, who has spent the major portion of his years living in the interior of the province, and who had an intimate knowledge of the country and the Indians, Professor Davidson gathered the data as to the districts where the sugar chiefly is found, the probable causes of it, and the other interesting matter which is the subject of this article, wherein, for the first time, the story of the discovery is made known to the general reading public.

"The sugar appears in white masses of different sizes, ranging from a quarter of an inch to two inches in diameter. The smaller masses form like white drops at the tips of single leaves, and also at times several of the leaf-tips are imbedded in a larger drop. Masses of greater size scatter over the leaves and branchlets. Placed in the mouth, the sugar is exceedingly sweet, giving a flavor comparable to the highest class of the manufactured article. For a moment it passes into a pasty consistency in the mouth, but quickly becomes entirely soluble under the action of the saliva. It is quite hard and dry, but with no tendency to stickiness, after the manner of coarse flour. The accompanying photo, taken by Professor Davidson, is of a good average specimen of the phenomenon as it occurs on the Douglas fir in British Columbia. A very light rain is, however, sufficient to dissolve the sugar off the fir; but very often it recrystallizes on the ground. At other times it remains in a semifluid condition and its food value is evidenced by the fact that flies and various other insects are attracted to it and feed upon it.

"In the districts of the dry belt on gentle slopes facing east and north in comparatively open areas where the fir-trees got plenty of exposure to sun, the sugar-producing trees chiefly grow. Where the firs stand densely, or where the trees are on fully exposed southern and western slopes, the sugar is not generally found, as the ground in this latter area dries out very quickly. From this it was evident that moisture played an important part in the sugar's production when combined with certain requisites of sunlight. Where a great many leaves are exposed to the sun, as in the case of the firs standing on comparatively open areas on the slopes facing east and north, an abundant formation of carbohydrates occur in a day. In the ordinary course of Nature's working, these carbohydrates would be carried to the growing tissues or storage ones, which is the case of Douglas fir in heavily forested areas. But throughout the dry-belt region the trees receive a much greater amount of sunlight over a greater number of hours per day than in other localities where they grow. Here, in the dry belt, the ground and atmosphere are also warmer, the air circulates more freely than in the coastal regions where the dense fir forests stand. Thus in the dry belt, where the firs are subjected to a long succession of unclouded days of blazing sunlight in summer, and where the soil condition provided warmth and moisture, the trees gather a great deal more carbohydrates than normally. The soil's increasing warmth over so great a period of sunlight, permits the roots to maintain or increase activity and continue nocturnally. This increased root-pressure and cessation of transpiration cause the leaves to become water-gorged. This water contains a sugar created by the reconversion of starch into sugar. But the warm, dry atmosphere existing even through the night in these dry-belt regions quickly evaporates the water, and the sugar remains to form drops of various sizes deposited at the leaf-tips, some of which are so large that they fall on to branches and foliage below, resulting at times in irregular deposits as shown in the photograph.

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HOW THE SUGAR GROWS

It appears in white masses of different sizes, ranging from a quarter of an inch to two inches in diameter. The smaller masses form like white drops at the tips of single leaves, while masses of greater size scatter over the leaves and branches.

"This particular variety is more abundant in the product of the Douglas fir than any other known plant. It was formerly obtained from a shrub in Turkestan and Persia. Of this pure and trisaccharide the Douglas-fir sugar contains almost 50 per cent. Thus, while the fir-sugar will never play a part as a food-supply, like the product of the cane and beet, it will likely eventually prove valuable for use in chemistry, and perhaps in other ways which the scientific experimenting conducted by those interested in the discovery will bring to light. And in the heart of British Columbia the Indians will still gather it as they did before the white man came. Unique as the discovery is, it is further remarkable that so long a time elapsed before it attracted scientific attention as related herein. Perhaps the Indians intentionally held the fact a secret."

# Women and the Simple Life

## HENRY M. STEGMAN

Various causes have united to make the health situation in this country increasingly grievous. The rush from the farms to city life is important among these. At the period of the Revolution, the percentage of the rural population was about three times as great as now. The disease-breeding habits of civilization are spread and intensified as wealth increases. Alcohol has been largely banished, it is true, but tobacco, tea, coffee and narcotic drugs are bravely trying to fill the vacancy. Luxurious modes of living, even among the so-called middle classes, tend to richer foods and less exercise. Business is carried on with an exaggerated briskness, and recreation and pleasure become a mad revel. In consequence, we see an increase in the ailments and in the death-rate of middle life. Some agencies are at work to counteract these evils, but many others must be invoked if much headway is to be made against them.

Women have a double power for good in this plight in which the nation finds itself. First is the responsibility which each one of them has for her own individual health. A toast at a banquet of doctors was pledged to "Woman—Our Best Friend." It is likely that the sex incurs more bills for medical attention than do men, but this may not be due to a larger percentage of sickness. If a man has a minor ailment or one which he thinks is minor, he is often inclined to apply home remedies or none at all. It may somehow not seem exactly manly to be sick. Anyway, his wife or some other female relative is likely to induce him to submit to her amateur medication. If a woman, however, is in ill-health, she does not receive much doctoring at the hands of her husband and therefore resorts to a physician. The female sex, moreover, is heir to all the diseases which affect men and many others besides.

When it comes to general health habits, each side shares in various deleterious practices and each has an assortment of its own. In largely disregarding anatomy and physiology in her dress, woman has acquired a series of weaknesses and disabilities which the other half of the race has escaped. Her devotion to fashion even leads her to sacrifice good taste; in this trait, however, the effect is not on health, save in-so-far as it lessens the peace of mind and pleasure of her male associates. The corset has been properly characterized in these pages; the enormous handicap of the feminine shoe is not properly appreciated. Examination of soldiers in the war showed an astonishingly large number of foot defects. What would similar statistics of young women reveal?

The windows of a shoe shop will give you a great big sermon on this subject. Note the men's shoes and the women's; yet, in shape, the feet of both sexes are the same. If women ought to wear the pointed toes and towering heels, why not the men? Still more striking is the contrast between a child's shoe and that of her mother. At what age does that enormous anatomical change take place which necessitates or even justifies such a different type of footgear? If the girl of four, seven or ten, has the same pedal contour as her sister of eighteen, why should not the little one have the benefit of French heels and toothpick soles? However, reason takes a back seat in the face of such explanations as, "Oh, my feet are of a peculiar shape and I cannot be comfortable in any other sort of a shoe."

It is fashionable, however, to wear low heels and broad soles at tennis or golf; so when this same young creature goes in for either of these sports, the skeleton of her foot promptly and radically alters, so that she is entirely at ease in the shape of footgear which would cause her torture on a shopping expedition or at home.

As to eating habits, it would be difficult to lay down many generalizations about the sexes which would not arouse dissent. Men are more likely to be both gourmets and gourmands than their wives and sisters. Someone has described women as "creatures that forget to eat unless there is a man around." This is an exaggeration, but the pleasures of the table certainly appeal to them less than to men. On the average, men have about twice the strength of women and this superior physical vigor doubtless accounts for the more active appetite. However, this delicacy of desire leads to tempting the feminine palate with highly seasoned foods and with sweets of all kinds. The sterner sex is more inclined to substantial dishes.

On the score of exercise, men are easily in the lead. The sisterhood of sport is considerable and is growing, but at golf, tennis, swimming, sailing, hockey, bicycling, skating, rowing, tramping, the men far outnumber the women; and certain games, like baseball, football, cricket and cross-country running, have no feminine devotees. Men are more likely to be oppressed by business cares than women, and have moreover been far greater consumers of alcohol and tobacco. A balance may be struck between the two accounts by consulting the longevity figures of the United States census.

More boys are born than girls. The census of 1910 showed 1,123,409 males under one year old in this country and 1,093,933 females. The total population was 47,332,277 males and 44,639,989 females. Despite the mortality from childbirth and other feminine ills, the male death-rate is greater than the female, so that in old age, the women actually outnumber the men. In 1910 there were 331-280 males and 336,022 females between the ages of seventy-five and seventy-nine. This preponderance increases with years, for between the ages of eighty and eighty-four, the figures were, males, 153,745, and females, 163,000; eighty-five to eighty-nine years, males, 56,335 and females, 66,483; ninety to ninety-four, males, 14,553, and females, 18,820; ninety-five to ninety-nine, males, 3,043, and females, 4,346; one hundred years and over, males, 1,380 and females, 2,175.

These figures may mean in part that woman is better endowed for long life than man, but the difference is chiefly due to superior health habits.

But members of what Kipling calls the more deadly sex have the keeping of a greater treasure than their own physical well-being. They are the custodians of the habits of children and to a considerable extent, of men. The influence of an intelligent mother on the future physique of her offspring may be far greater than heredity. Indeed, she may counteract or wholly nullify congenital tendencies to weakness and disease and replace them with superb bodily vigor.

With the adults of her household, her power is less autocratic, but it may be used with signal benefit. Here, however, is need of all the tact which her sex can command. To begin, she must of course make a study of the principles of right living. Her physician will aid her in this, as will the numerous books and magazines published on this subject. But when she is thus equipped with the breastplate of knowledge and the buckler of faith, her battle is just beginning. She must change the diet and living habits of her family with such diplomacy as not to arouse antagonism. Perhaps in some cases her *"Ipse dixit"* is enough, but such are rare. Usually a radical alteration in the menu, hours of sleep, exercise, clothing, etc., if attempted at one swoop, would cause such a tempest that more harm would be done than good. If discontent and bickering are to attend the change, it would better be dropped.

Men for force, women for finesse. The mother, if clever, can introduce her reforms in such a way as to make them actually agreeable. Her method must in each case vary with her own personality and with that of the individuals whom she wants to lead in the straight and narrow path of biologic living. Alterations may be made very gradually and without calling attention to them. Rich and deleterious foods may be omitted with increasing frequency until they are abandoned altogether. Overeating even of wholesome dishes is an evil; it is due in many instances to a parent's insisting on giving another helping which is not craved by the appetite. Clothing may little by little be made more hygienic, and other reforms be instituted by degrees.

In general, however, it is better to open with a frontal attack. Benjamin Franklin's method of convincing is worth trying. He didn't say: "This thing ought to be done," but, "What do you think about thus and so?" or, "Has it ever occurred to you?" His victim finally believed that he himself had originated and sponsored the idea which Franklin had persuaded him to adopt.

Some such deft procedure which makes the father and the sons and daughters apparently take the lead, is most desirable. Books on various phases of the subject may be borrowed at the library or bought. If new suggestions come from the younger generation, so much the better. Each person should be encouraged to experiment with cold baths, both water and air, open-air sleeping, going to bed earlier, regular habits of exercise, and, above all, with dietary reform. Tobacco, tea, coffee, meat, should be dropped as quickly as seems wise.

A sort of roll-call should be instituted to make sure that every one washes his or her teeth three times a day. A book should be kept with the dates when visits are made to the dentist, so that the intervals between his examinations and cleansings shall never be more than six or nine months.

Some fields are already ripe for the sickle. A lecturer was asked if his health did not suffer when he was on tour.

"On the contrary," he replied. "You know my wife is what other women call a wonderful cook. That means that she has all sorts of highly-seasoned and intricate dishes on our table, and I have no choice but to eat them. When I travel I can have a simple fare, and I always feel better in consequence."

A physician confesses that when he gets away from home, he subsists almost wholly on apples and peanuts, and finds that menu a treat both to his palate and his digestion. He might have added, "And to my pocketbook." This case is extreme, but the simple life certainly saves money.

The mental side should never be overlooked. Right living means controlled temper as well as controlled appetite. Persistent fault-finding, grumbling, "grouches" and surliness are really maladies, showing themselves in the mind instead of in the body. Moreover, they affect our physical functions, especially those of the stomach and intestines. Here, too, the mother-physician must be deft in her remedies to restore cheerfulness—which is mental good health.

The rewards to her who engineers such a revolution in her household will be many and great. Some may be described as selfish, others as unselfish, although the latter will really be to her advantage. If her own ailments are lessened or banished, there is one great, very great, gain. Sickness in the family, whether of the chronic or "walking" type, or the acute, often means more burdens and distress to the mother than to the direct victim of it. The expenses entailed perhaps hamper her for months afterward. It is a known fact that most of our maladies are "home-grown," and a family which practises the simple life will have a surprising immunity from attacks of ill-health. A well family means a happier mother.

Then, too, she can greatly lighten her own labors. Every one of the family old enough to do so should have household tasks, both for the discipline and the benefit of the exercise. The wife may thus be relieved of some of her burdens to the advantage of all concerned. Simplicity of diet means smaller bills at the grocer's and less work for the home-maker. Two of the meals, breakfast and lunch, or supper, may well be restrictive so that they involve no long time in the kitchen. Dinner must be more extensive, but here, too, there is usually room for changes that will cut down the labors of cooking and dishwashing. The more elaborate a meal is, the more elaborate the processes of digestion which it entails. Stomach and cook alike profit by the plain, wholesome diet. Much time is spent in preparing desserts which entice to gormandizing. Fruit, raw or stewed, may be substituted for them, and indeed may well appear at every meal. Nuts make an excellent ending for a repast. Preferably they should be served in the shell, as this lessens the likelihood of over-indulgence and gives a period of lingering which is better than rushing away from the table.

Fashion is making housekeeping easier by curtailing architecture. The scarcity and high cost of domestic help is aiding in this tendency. The old-fashioned parlor has practically been abandoned. Bungalows, whatever their faults, save a deal of running up and down stairs and concentrate household activities. Small and scientifically arranged kitchens save a mile or two of walking per day, as Government tests have shown. New houses, even of an expensive grade, now tend to eliminate the dining-room. State meals are served in that end of the living-room abutting on the kitchen. Light repasts may be eaten where they are cooked, especially if the family is small and there are no servants. Most people in the United States perhaps habitually eat in the kitchen, although many of them would not care to advertise the fact. In numbers of expensive apartments, meals are served in the living-room —unless they are munched in the kitchenette.

The orderly procession of human affairs has been accelerated by the war. The old order yieldeth place to new. Woman has a larger opportunity and a larger responsibility. She can do a great work for herself and the race by adopting the simple life.

# Anorexia, or Loss of Appetite

The absence of appetite is one of the most constant effects of profound toxemia. When the intestine is loaded with putrefying material, the products of putrefaction are absorbed into the blood in great quantities, and produce profound disturbance of all the nutritive functions. The thirst center, as well as the hunger center, is often depressed to such an extent by the bacterial toxins circulating in the blood that the appetite for water as well as for solid food is almost wholly lacking. The tongue is coated, there is a bad taste in the mouth, and the very thought of food is often nauseating. There is complete perversion of the gustatory sense; in certain cases, lack of appetite even when the tongue is clean; but even in these cases, stasis in either the large or small intestine is rarely absent.

In the majority of cases, the X-ray shows incompetency of the ileocecal valve, as the result of which there is a reflux of putrid material into the small intestine, and absorption of toxins into the general circulation.

The first thing to be done, of course, is to remove the cause by changing the intestinal flora. In the meantime, even though the patient may be weak and emaciated and greatly in need of food, it would be useless and even highly detrimental to urge upon him the taking of rich or hearty foodstuffs. Even milk often aggravates the situation rather than relieving it. The best thing to be done is to put the patient at once upon a fruit fast or a fruit regimen.

In the majority of cases, the patient will by the second or third day, under this dietetic regimen, acquire a natural appetite. Not infrequently, the appetite becomes so keen that the simplest food is taken with zest. If the patient is much emaciated, it is well to administer in the intervals between meals eight to ten ounces of milk sugar or malt sugar, daily. The sugar should be taken dissolved in water or fruit juice, one ounce to the glassful.

When the tongue clears off readily after two to four days of the fruit regimen, the patient should be put upon the milk regimen for two to four weeks.

In cases in which the appetite remains deficient and fickle, after the application of the above measures, the patient must be encouraged to eat liberal quantities of food, even though appetite is lacking. This may best be accomplished by administering the food in very simple, rather concentrated form, in small quantities, at frequent intervals.

Malt sugar given in a solution of water, or fruit juices in doses of one to two ounces every hour or two during the day, or between meals in addition to the food taken at meal time, is a very excellent method of increasing the calory intake. Fruit juices and the juice of stewed raisins are valuable sources of energy.

Carbohydrates, especially in the form of fruit juices, with or without the addition of malt sugar, are readily taken when foods rich in fats and proteins are not relished. Fats and proteins are, in fact, usually not well borne by these patients. The more foods of this sort used by the patient, the worse the appetite usually becomes. It is highly necessary that the protein constituent of the food should be reduced to a minimum. By so doing, the production of toxins in the intestines is lessened through the change of flora, and the liver and other excretory organs are relieved of the task of eliminating unnecessary and unusable protein.

Patients who have but little appetite, will often take fruit juices and liquid foods very readily, though rejecting other foodstuffs. By reference to a table of food values, it will be noticed that many fruits have a caloric value considerable in amount; and by the addition of malt sugar, with or without cream, the caloric value may be greatly increased—more than doubled in most cases.

Malt sugar possesses the advantage that its sweetening power is considerably less than that of cane sugar, though greater than of milk sugar. On this account and also the fact that it is not, like cane sugar, an irritant to the digestive organs, malt sugar may be used in quantities two or three times as great as cane sugar.

# Animal Foods

All food comes originally from the vegetable kingdom. The chlorophyl grain of the green leaf is the mystic laboratory in which the lifeless inorganic elements of the mineral world are endowed with life. The green parts of plants are factories in which are woven the living fabrics known as organic substances, of which the actinic rays of the sun constitute the warp, while nitrogen, carbon, calcium and other elements which enter into the composition of living things form the woof. Each little chlorophyl grain is a trap which captures sunshine and stores it up in the form of carbohydrates, proteins, fats and other food principles with which to feed the vital fires which burn within the bodies of animals. Animals cannot originate food; they only utilize food principles which have been produced by plants. In passing through the bodies of animals, foodstuffs undergo changes of form, but are not produced *de novo.*

Plants are food producers; animals, food users. Food is to the animal just what fuel is to the lamp, the stove or the locomotive.

In the economy of Nature, while it is true that flesh is largely used as food by animals, it is clearly evident that its first and primary purpose is to serve for food consumption through muscular action. The only animal substances specifically prepared by Nature as food for animals, are milk and the yolks of eggs, both of which are intended to be used by the infant animal while attaining the development necessary to enable it to gather food for itself.

In the yolk of the egg is found not only fat, protein and a small amount of carbohydrate, but the lime, iron and other salts and vitamines—everything which the young chick needs for the building of blood, flesh and bones. It is a little luncheon provided by Nature to support the young creature during its period of helplessness.

Milk, on the other hand, is supplied day by day or hour by hour to meet the current demands of the young mammal.

**Special Characteristics of Animal Foods**

Milk and eggs are animal foods especially adapted not only to meet the needs of young animals in general, but to suit exactly the nutritive requirements of infant animals of the particular species to which the animal producing the milk or the egg belongs; that is, cow's milk is exactly suited to meet the needs of calves. Goat's milk is different and is adapted to kids. The milk of the dog or of the seal is still different, and is precisely adapted to the young of these animals. A young animal may be raised on the milk of an animal of another species, but not without considerable difficulty and risk, and not infrequently the experiment is a failure. Of the 300,000 infants who die in the United States annually not less than nine-tenths are bottle-fed infants, a fact which bears eloquent testimony to the inferiority of cow's milk to human milk for human infants.

The yolk of an egg is a complete foodstuff, and is easily digestible; whereas, the white of egg in a raw state is almost totally indigestible in the alimentary canal of human beings. Eggs are poisonous to some people. Cooking, however, to a large degree lessens this toxic property of eggs.

Of the three sorts of animal foodstuffs, —milk, eggs and flesh,—milk is the only one that contains any appreciable amount of carbohydrates. In cow's milk, about one-third of the total solids consists of lactose, or milk sugar, a wholesome carbohydrate, although one which is utilized with much greater difficulty than any other of the sugars. Cow's milk is almost totally lacking in iron, while flesh foods are equally deficient in lime. The yolk of an egg is well supplied with both lime and iron. Milk and egg yolks furnish a rich supply of vitamines. In these, flesh is almost totally lacking, for the reason that in animals the vitamines are chiefly stored in the liver and kidneys, as the lime is almost wholly stored in the bones, leaving the lean flesh, the part commonly eaten as food, almost wholly lacking in both vitamines and lime, two highly important food principles.

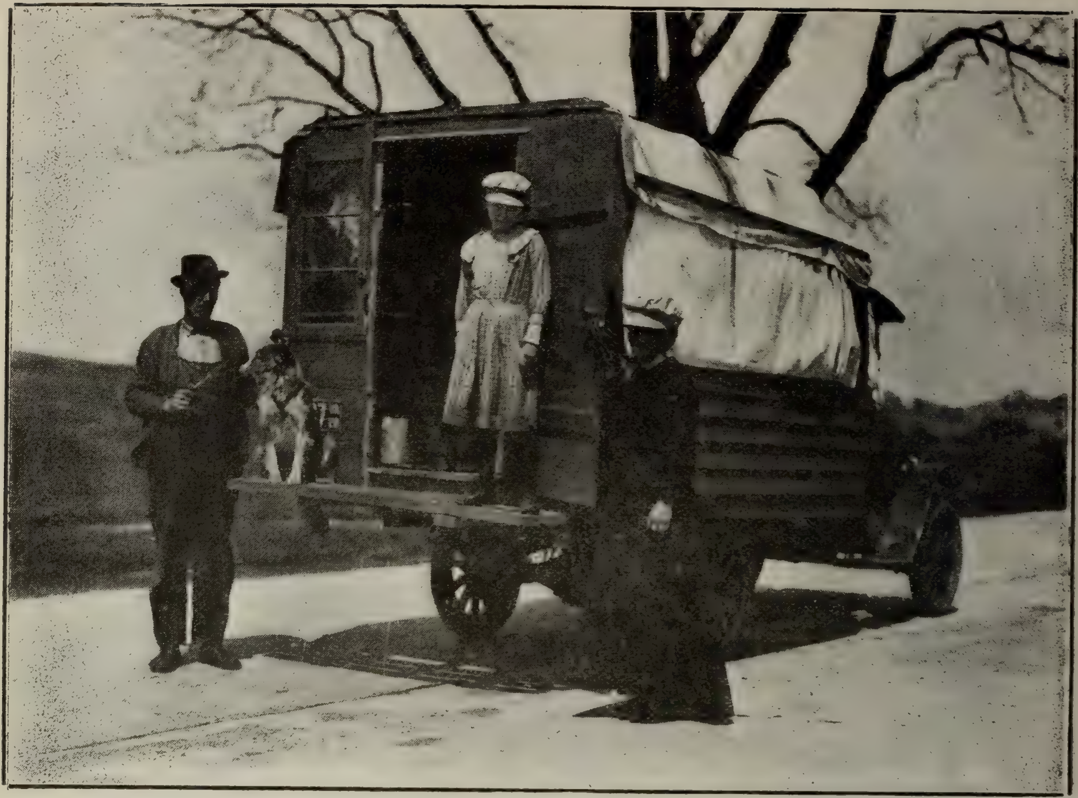
Food iron, another essential food principle, is present in meat, but in not nearly so large an amount as is generally supposed. Most of the iron contained in the body of an animal is found in its blood. In the slaughtering of an animal, most of this is lost, the amount left being so small that an ounce of beefsteak contains no more iron than the same weight of garden greens, such as spinach, and only half as much as is found in the same weight of certain greens, as the red root or dock.

The only particular in which all animal foods are superior to most vegetable foods is in the amount and quality of the protein which they supply. The protein of milk, eggs and meat is necessarily a complete protein; that is, it contains all the elements (amino acids) essential for the building of animal tissues.

Most vegetable proteins are incomplete, although there are many vegetable products, such as almonds, peanuts, soy beans, and probably a great number of vegetable products not yet discovered, which contain complete proteins.

The proteins of grains and of most of the common staples which have been selected for human consumption, are incomplete, and it is probable that this is the principal biologic reason why meat has come to be considered an essential part of the dietary in cases in which grains are the chief food staple. The lack of knowledge of this fact has doubtless been the principal cause of failure in attempts to adopt a diet consisting exclusively of vegetable foodstuffs. It is possible to select such a dietary from the vegetable kingdom, as has been abundantly proved by McCollum, Hindhede and others; but it must be admitted that the present supply of vegetable foodstuffs containing complete proteins is not sufficiently great to furnish the great population of the world with a sufficiency of this essential element.

We are glad to be able to say at once, however, that it is not on this account necessary to resort to the use of flesh foods; for, as McCollum has abundantly proved, milk is much better adapted than meat to complementing the proteins of vegetable foodstuffs, since it will not only supply its own complete proteins, but furnish elements necessary to render complete the proteins of other foodstuffs to which it is added. Eggs also are an important and competent source of complete proteins. The dietary may be made sufficient in the amount of proteins, even when otherwise exclusively vegetable, by the inclusion in the daily bill of fare of milk to the amount of 16 to 20 ounces.



# A Home on the Road

### C. H. THOMAS

Mr. J. L. French, wife, and daughter were residents of a small town in Virginia. Neither he nor his wife had been well for several years, and they attributed their ill health to the climate and the too confining work of a small place; so Mr. French bought a one-ton Maxwell truck, and built upon it living quarters. The sides are of weather boarding up to about four feet of the top, the remaining space and the top being of heavy canvas with a screen covering to keep out mosquitoes and bugs. Inside, there are three bunks and an outfit of bathing, cooking and eating utensils. They had traveled over 500 miles when I saw them, and, by slow stages, were going to make a tour of the country in this truck. Both Mr. and Mrs. French and their little girl were in fine health, and they attribute this to the out-of-door life and getting plenty of fresh water, vegetables and wholesome living. They buy their milk, eggs, and supplies from the farmers as they go along, and they say that the prices of things are remarkably cheap in this way, as they purchase nearly everything firsthand from the farmers. Mr. French is an expert machinist, and quite often runs across a paying job. They were taken for gypsies once, but soon assured people that they were nothing of the kind, and that they were just honest folks out for their health. Mr. and Mrs. French say they both have benefited wonderfully from their experience; their appetites are fine, their viewpoint on life is widened, and the whole trip has been a series of adventures. They have helped many motorists on the road, from towing a car, to repairing one miles from a garage. Instead of buying a big touring car and bowling along the roads at sixty miles an hour, they have chosen the very best plan that anyone could, traveling at a rate not exceeding fifteen miles an hour in this truck. They are thus enabled to see the country as it should be seen. This story is told as a possible help to some others who may need to get into the open in an inexpensive way. Certainly, the French family have found it a joyous life.

# A Vegetarian Experiment

Twenty years ago there came to this country from Russia a small colony of Doukhobors, who established themselves in Western Canada, and now number a settlement of ten thousand souls. A writer who has recently visited the colony finds them prospering, and gives us a very interesting account of the people and their accomplishments, which so clearly demonstrates the practical efficiency of the vegetarian regimen that we think it worth while to quote at length:

"These Russian vegetarians came to Canada practically penniless, homesteading in Northern Saskatchewan and Alberta, The first year or two they withstood the severe winter sheltered only by huts improvised from canvas and sods. It might be claimed that thousands of homesteading parties have done the same, but in this instance the point for us is that on a vegetable diet these people were able to survive the same bitter weather which others have thought they required meat to resist. On a vegetable diet these people homesteaded, and on a vegetable diet they have in twenty years transformed 300,000 acres of wilderness into one of the finest and most prosperous farms in Western Canada, producing large crops of grain and owning their own grain elevators. About six years ago they bought, in addition, 10,000 acres of wilderness in Southern British Columbia.

"They cleared that land of trees, stumps and boulders with their own hands and set out thousands of apple, peach, pear, cherry and plum trees which are already bearing fruit. They have also established a large grain factory and a large tomato-canning plant with railroad accomodations to the door, whence fruit is sent to markets in distant cities.

"The details of the winning of these idle acres to production, by this race of vegetarians out of old Russia, reads like thrilling chapters in a tale of adventure. We discovered in our visits to their broad farms a spirit of modernity, a grasp of improved methods in setting trees, in pruning, in the saving of land in the giant irrigation systems, in their fine houses and in the general air of industry.

### A Millet Painting

"Stepping off the train, say at Brilliant, B. C., is like lifting the curtain on a succession of picturesque Biblical and Euro-Asiatic scenes—the women in full short skirts, kerchiefs over their heads, usually barefooted, occupied with their business of crop-growing or reaping with a staunch heartiness—the peasant women of the Millet type.

"The houses of the settlement are not clumped together into a village, but are perhaps half a mile apart. Each house is, however, called a village since it shelters from 30 to 50 people. Each village has its own barns, its Russian bath house, its store-rooms furnished with neat rows of bins for white, red or black beans, millet, clover seed, wheat, flax seed, etc. The plan of the villages is to have the two dwelling houses face south, while the storehouses, work rooms, harness rooms, wash rooms and bath houses are built in single file under one roof, enclosing a big yard on the north, east and west ends. By this plan the out-houses act as a wind- and snow-break in winter and constitute at all times a shelter to the great yard, where on a clean hard-beaten earth floor great tarpaulins of grains and vegetables are spread in the sun. Here, too, on long boards, drying fruit is always to be seen in the late summer. The life of the village is concentrated in these yards.

"Two women are appointed each week to do the cooking for the family—a plan which leaves the rest free for outdoor work. They sift millet seed for porridge; for the bean-shelling a tripod with a suspended sieve is set up. The women have exceptionally happy-looking faces and very gentle manners. All of their work is conducted in a very dignified manner. They have their spinning wheels handy and at intervals sit down to spin in the yard or by the doorstep. The loom stands inside of the houses, and when a woman desires to take a turn at weaving she does so, while the sun evaporates her apples or converts her cakes of mashed fruit into a hard mass.

### An Old-World Threshing Floor

"A mile or two from the railroad station is a cleared place with the earth beaten harder than in any of the yards. It is a primitive old-world threshing floor, such as might be found in any of the wheat-growing regions of Southern Russia, and such an one as Tolstoi has introduced into his tales of Russian life with such telling dramatic effect. On a hot summer afternoon the chaff, as it is swung from the hand-made wooden forks wielded by a score of sturdy Russian men, creates a cloud of straw-dust visible for miles. This is the way the wheat for home use is winnowed — the wheat that in time comes to the village table in giant loaves of home-made bread—the Russian brown bread of which all have heard and which we wish all might taste. It is their good home-made bread of life which helps these vegetarians to forget meat.

"A typical meal begins with soup, in which every vegetable one can think of, with the exception of beets, appears. The soup is supplied with the necessary fats by a generous use of butter. There is plenty of brown bread to be eaten with the soup, which is drunk from hand-made wooden spoons. This is followed by a salad of tomatoes fresh from the vines, and crisp cucumbers. Then follows a dish of sliced potatoes and cauliflower fried together in butter and then baked in the oven. For dessert they may have honey from their own apiaries, a millet pudding with cream, carrot or bean tarts with flaky pastry from home-made flour, plenty of fruit in season, and always jam and cups of delicious Russian tea.

"The menu ignores meat, yet is quite as comprehensive of variety as the average menu at home. Indeed, these people are prodigal with good things to eat. Their meals are big, hearty affairs, and anyone partaking of them will finish unconscious of the fact that a meat has not been served.

### The Youngest Bee Master

"These vegetarians are very fond of flowers, and plant them in every niche and corner. One comes upon them bordering the peach orchard, the millet patch, the melon vines. One wonders why they are quite so generous in the matter of seeds till he remembers the bees—the flowers supply nectar for the honey. The most successful of the bee masters is little Mischa, a boy of 13. Asked if he were not afraid the bees would sting him, he answered sweetly, 'No, the bees are my friends.' "

# For Your Health—Make a Garden

R. V. ASHLEY

(Seventh Article)

"Ho! for the bending sheaves,
Ho! for the crimson leaves
Flaming in splendor!
Season of ripened gold,
Plenty in crib and fold,
Skies with a depth untold,
Liquid and tender!"

October, next to April, is the most important month in the gardening calendar. The beautiful autumn days present a wonderful opportunity for adding to your gardening pleasure and for building up by outdoor employment a stock of health for winter storage and use, if you please, by doing in a leisurely way everything that may be done now for the good of your garden.

The period between September 15 and October 15 presents more neglected opportunities in gardening than any other month in the year. The amateur, young in gardening experience, may very naturally conclude that with September, at latest, the planting season ends. On the contrary, something may be planted in the ground every day until freezing weather comes. And if you are keenly alive to your gardening opportunities and constantly on the lookout for new and better ways, your motto now will be, "Plant something every day this fall." The following are ironclad arguments for fall planting:

1. You avoid the spring rush.
2. You can do a better job because you have more time.
3. You can select varieties more intelligently.
4. There is less danger of substitution, because seed stocks are more complete. Besides, the seeds are fresh and consequently of better quality.
5. You avoid summer drouth and delays in shipment. It is a fact that summer drouth kills more plants than does winter cold.
6. By improving your opportunities now, your garden next spring will be in better condition, the work will be less hurried and better done, and you will be able to carry out some of your cherished ideas as to planting and arrangement which the usual spring rush renders impossible. The average gardener, under the stress of spring garden work, has no time for leisurely planning, but must of necessity prepare the ground and stick in his seeds and plants with the minimum of effort and time—almost any way to get the job done. So let us begin now, not only to plan our garden for next year, but also to make it.

First, of course, we must prepare the ground. As rapidly as crops mature, remove the parts which are of no further use and place on the compost heap such as are not likely to harbor insects or disease. Such growths as potato haulms and asparagus tops should be burned and the ashes returned to the soil. After clearing the ground, add fertilizer in the form of stable litter and bone dust; then plow or spade deeply.

### "Bastard Trenching"

Heavy, stiff soils should be worked by the method known as "Bastard Trenching." Start at one end of the garden, or of the plot to be worked, and take off the top layer of soil in a strip two feet wide, removing it to the part of the garden to be worked last. Then apply coarse manure or other litter to the under layer of soil and turn it over with a spading fork. Then lay off another two feet of row and lift the top layer of soil, placing it over the under layer of the first row, having first applied additional fertilizer to the soil which has been forked over.

So proceed by measured rows until the entire area has been worked over in this way. This method is much better than the ordinary process of subsoiling, in which the subsoil itself is brought largely to the surface. Such soil does not work easily and will not until after several years of cultivation and the addition of much fertilizer. On heavy soils especially, freshly slacked lime or ground limestone should be used liberally with every turning of the soil. If these suggestions are followed for a few years, the heaviest, stiffest and most untractable soils may be converted into the very best sort of friable, powdery loam. The lime may be applied advantageously three or four times a year, and may not necessarily even be dug into the soil, as it will settle readily under the influence of rain. If desired, however, it may be worked into the soil with a fork.

Deep working of the soil as here suggested furnishes a deeper root run, which means more healthy, vigorous and abundant foliage, and the loose undersoil becomes a water reservoir which will go a long way toward protecting the plants against drought next summer.

Get ahead of your neighbors, and break your own previous records for early vegetables by sowing before October seeds of beets, carrots, lettuce, parsnips, parsley, peas (the smooth, round seeded sorts), radishes, spinach, salsify, Swiss chard, corn salad or fetticus, early turnips, and Egyptian or winter onions. The seeds should be covered somewhat more deeply than in spring sowings and when the ground freezes should be protected by several inches of straw or leaves. The seed should be sown more thickly than in the spring, as of course there is some risk involved, and a smaller portion of the seeds will produce plants next spring. The game is well worth the candle, however, for if you succeed, you are days and weeks ahead in maturing these crops.

If you have a cold frame, you can plant these vegetable seeds with almost one hundred per cent of success; but the cold frame is even more valuable for the fall planting of flower seeds and cuttings than for vegetables, unless you have a sufficient supply for both.

Our next article will deal largely with the storing of vegetable root crops for winter use. If the season is favorable, this may be done during the first half of November.

### Storing Tomatoes

Tomatoes, however, will not stand a heavy frost, and must be given protection if their season is to be prolonged. This may be accomplished in a number of different ways, some of which are as follows:

1. Select a warm, sheltered space, and spade up a piece of ground. Pull up the tomato plants with the fruits on them and spread over this newly spaded ground. Cover well with straw, leaves or burlap. The fruits will ripen here beautifully until freezing weather arrives.

2. Make a ripening house out of a dry-goods box. Put sliding shelves into the box and lay the tomatoes on the shelves. These shelves can be pulled out occasionally so that you can examine the tomatoes. Add a close-fitting door. Maintain a warm, moist atmosphere, and the tomatoes will ripen well even in the dark. Be sure that all rotting fruits are removed promptly or they will infect the good ones.

3. Wrap individual tomatoes in newspapers and lay them away on dark shelves in a warm, moist cellar. This protects the individual fruits from contamination of others, but involves more labor for inspection. However, ripe tomatoes from the

garden may be had in this way until Christmas or later.

4. Pull the vines with the fruits on them and hang the whole, root ends up, in a dark cellar. This, too, will often give you ripe tomatoes for your Christmas dinner.

### Start an Asparagus Bed Now

Do you ask how? Asparagus as a crop is almost fool proof. That is, it will grow in almost any soil or situation unless it is too wet or too sour;, and that with the minimum of care. A properly prepared asparagus bed is good for twenty years or more, and the expenditure of time and money necessary to make an ideal bed will be well repaid by repeated luxuriant crops of big, succulent stalks every spring. The bed should be located at one end or side of the garden where it is not likely to be disturbed by other gardening operations. The best soil is a sandy loam, well filled with humus and well drained.

Mark out the rows three feet apart, then dig trenches three feet deep and eighteen inches wide. In the bottom of the trench put a layer of cobble stones, then a layer of smaller stones. In soil that is naturally thoroughly drained, the stone foundation is not necessary. Any poor soil and the sub-soil taken out of the trenches, should not be put back. Next place a good layer of sods, turned bottom up, then twelve inches of thoroughly decayed cow manure. Then fill up the trench to within eight inches of the top with good top-soil mixed with a moderate proportion of dried sheep manure and dried bone meal. This done, the trench should be allowed to settle for at least a week. The settling may be hastened somewhat by thorough watering. After settling, the top of the soil in the trench should be just ten inches below the surrounding surface.

The asparagus roots should be spaced eighteen inches from center to center and should be spread out over a ridge made by drawing the soil from the sides of the trench toward the center. If the work is done right, the roots will be almost flat instead of being set vertically into the soil—a common mistake of amateurs. The roots should then be covered to a depth of two inches with very fine light soil unmixed with manure. Pure sand may be used for this.

When growth begins, the trench is gradually filled with the same kind of soil to within one inch of the top. This one inch of space provides means for holding the water for the first year to supply the plants with an abundance of moisture.

Some authorities advise the setting of one-year roots, others of two-year roots; but the home gardener, who wants the very best and quickest results, should not be contented with anything less than three-year roots. Younger roots may be entirely satisfactory for commercial plantings, but for the home garden results are too long delayed.

The two best sorts in common use are Palmetto and Giant Argenteuil. The former produces an abundance of stout stalks of most agreeable flavor. The latter is a French variety and has been the only rust-proof sort in common use. If asparagus rust is common in your locality, this is the best standard variety for you to raise. It really is a rust-proof development of the Palmetto.

During recent years, the U. S. Department of Agriculture has been experimenting extensively in the effort to produce a real rust-proof asparagus, that in size, productiveness and quality, would prove superior to all other sorts. This result is said to have been obtained in a new variety known as Mary Washington, which is the result of the crossing of two fixed strains from seeds of rust-resisting sorts.

After planting your bed, do not cut a single stalk for two years. This length of time is required to build the constitution of the plants so that they will produce their bounteous crops of big, delicious stalks, for twenty successive years or longer. Two hundred plants will furnish an ample supply for a family of average size.

After planting the bed, the top soil should be kept loose and fine by cultivation once a week, and when the stalks begin to show through the ground, apply a dressing of fertilizer. One consisting of two parts bone meal and one part of muriate of potash, is excellent. Six pounds are sufficient for one hundred feet of row.

### The Passing Flower Show

It is the evening of the season in the flower borders. October shows distinctly the ravages of early frosts. Nevertheless, the plant material suited to our latitude includes many varieties which may be depended upon to make the October garden gay, especially with blue and white bloom, which is softened here and made brighter there by clumps of pink in delicate shades, yellow, orange, lavender and violet. Perhaps the fall blues in the flower garden show more heavenly tints than those ot any other season. Our beautifully exquisite, native fringed gentian may not be naturalized in the garden without more coddling and precise care than are at the command of the average amateur, but its color is closely approximated in the garden by a number of plants of comparatively easy culture.

The blue spirea (Caryopteris mastacanthus) is excellent material for the October garden. In the North it dies to the ground every year, but in the spring sends up an abundant growth of foliage which is sure to flower in the fall.

Eupatorium ageratoides is a native plant of sturdy growth which well deserves a place in the hardy border. It thrives in the shade, grows four feet tall, and its bright, flat flower heads are a soft grayish white. Eupatorium coelestium is a blue flowering hardy perennial which bears its flowers well into the month. Its bloom is in flat clusters composed of many small flowers with prominent stamens.

Buddleya variabalis carries its lilac flowers into late October. This is called the butterfly bush, because its flowers seem to have a peculiar attraction for butterflies of many varieties.

The blush flowers of Poltonia latifolia help to soften the heavier colors and foliage of the season.

The most brilliant show of the month is made by the flowers of the hardy asters and the hardy chrysanthemums, though the anemones contribute generously to the mass effects of the border bloom. The latter come in white and pink, and include both American and Japanese varieties.

No less than fifteen varieties of hardy asters extend their blooming period well into the month. They furnish a wonderful color range from white through several shades of delicate and a deep pink, to lavender, violet and deep lilac.

The following varieties of hardy chrysanthemums should be included in every scheme for bright autumn coloring: Cranford's yellow, Hujos (white), L'Argentalis (deep orange), Ninaplick (yellow), Normandy, (white), Province (white), and October Gold (golden).

Galax aphilla bears its bright yellow flowers this month, and the hardy for-get-me-not. Myosotis plaustris sempervirens, with its small blue eyes, adds delicacy to the scheme.

Among the shrubs there are few that flower at this season. The exceptions include Abelia Chinensis, which continues its waxy flowers into late fall and its leaves half through the winter. The Rose of Sharon, too, continues its bloom into late fall. Several of the Tamarixes and our native Witchhazel, Hamamelis Verginica, also carry their blossoms late.

Not by any means the least attractive feature of our fall flower gardens is the berries of certain trees and shrubs, particularly those in shades of red and white. The most common shrub with attractive white berries is the snowberry, Symphoricarpus racemosus, the berries of which form a decorative feature well into the winter, usually until eaten by the birds. The following contribute ornamental berries in shades of red and pink: The Washington Thorne, Craetegus cordata. C. nitida. The Cockspur Thorne, C. crusgalli. The English May, C. oxycantha. The Mountain Ash, Sorbus aucuparia. The Flowering Dogwood, Cornus Florida. Our Native Heath, Ilex opaca. Black Alder, Ilex verticillata. I. Sieboldi. Japanese bush honeysuckle, Lonicera Morrowi. L. Barbarica. Berberis vulgaris. B. Thunbergii. High bush cranberry, Viburnum Americanum. Sambucus racemosa. Cotton Easter Horizontalis. The foregoing all have scarlet fruits. The red chokeberry, aronia, arbutifolia, and the Japanese Photonia villabosa, a tall shrub, have bright red berries which last through the fall and into the winter. The Chinese gooseberry, Ribes fasciculatum, is much prettier than the Alpine currant, which bears its berries in August. The former has larger berries, which remain on the branches, plump and fresh, until the middle of November. This is a polygamus shrub, and care should be taken to select specimens already fruiting, or you are likely to get barren plants.

The material mentioned gives ample range for much ingenuity in the production of autumn garden pictures, and in connection with the hazy, sunshiny days of October and the painted leaves of the natural landscape, is sufficiently plentiful in variety and beautiful in flower and fruit to keep the heart of the garden lover athrill with expectancy, and passing content in happy realization of early garden dreams.

# What About the Ouija-Board?

The ouija-board craze is assuming such proportions that it seems necessary to give it consideration. According to the testimony of an eminent alienist, it threatens to fill our lunatic asylums to overflowing. Whether the ouija really makes lunatics or only discovers them, the expert does not tell us; but there can be no doubt that it has in many instances been the means of upsetting a mental balance which was by nature somewhat too delicately poised.

There's nothing supernatural or uncanny about the ouija-board. It is strictly a natural phenomenon and in fact a very commonplace experience in a new form of expression. It is simply musing on paper. Who has not on some occasion discovered himself humming or whistling a tune or even giving expression to phrases or sentences without having consciously formulated the music or the words? The writing faculty is an acquired automatism, like walking. One can walk without thinking of his legs. The legs appear to operate themselves. Just so do the arm and fingers in writing.

The ouija-board is simply a mechanism which makes the writing so easy that the automatic or subconscious working of the brain finds expression through it, as in whistling or vocal musing.

In the August number of *Harper's* Mr. Burges Johnson writes an illuminating story of an experience which sets forth the ouija-board in a true light, and shows the folly of appealing to this trinket for information. We quote as follows:

"The other day I was reasoning to myself that perhaps the most curious thing about the ouija-board is the fact that great numbers of people don't believe in it. Surely now and then words come through us and not from us! Odd phrases, rhymes, sentiments, that pop out or start to pop out and are prevented because we take thought just in time—these are not our work, but that of some imp or goddess behind us.

" 'Are my poems inspired?' said a poet in answer to my question. 'No—but I think that in each worth-while poem a key phrase or line or couplet has come to me from somewhere without action on my part. Then by downright hard work I give it a setting.' The muse of poetry evidently stands behind him, dictating, and he gains in power as he becomes more and more 'mediumistic'.

"But a perverse imp stands back of my chair. The things that it utters are foreign to my nature, for I am instinctively reverential, and I usually succeed in choking them back. But with a ouija-board, smooth as to surface, with the feet of the little table well polished and every circumstance nicely calculated to banish inhibitions—well, frankly, I am afraid of it. The imp is unhampered enough as it is. He is ready enough to shout at funerals, say 'boo' at a bishop, or make clucking noises at dinner-parties. He is inconsequential. He is profane. 'Hark, hark the lark!' quotes my companion, ecstatically. 'Just hear him bark,' says my imp though I myself revere the poem—'He's always noisy after dark.'

" 'We are groping through the limbo of an inchoate world,' says the professor at my right. 'Woof!' says my imp, and I choke him just in time.

"These few introductory remarks of a confessional sort will explain my attitude toward ouija-boards. I don't like them because they may work. Certainly I do not want witnesses present whenever I try one. Yet I tested one once. I did it alone, contrary to the rules of the game, and you can believe this scientific report or not, just as you like. Perhaps you'd better not.

"I locked my study door and took the thing upon my knees, placing all my fingers softly upon the little three-legged table, as the pictures indicated. After some cogitating I propounded my first question. 'Are you there?' I asked. For a moment nothing happened. Then—and I admit a certain spinal chill—it began a laborious march. 'GJSWOGIDOX.' it said. 'That's just gibberish,' I thought, triumphantly. But then my more scientific self urged me to be fair. The question itself was nonsensical. Of course it was there. I held it on my knees.

" 'Will you speak the truth?' I asked. There was no answering motion. I tried varying pressure—still no result. 'Oh, well,' I thought, 'silence may mean consent. One should, after all, exercise every power of interpretation.' At this I fancied I felt a faint movement—perhaps in affirmation.

" 'Tell me,' I said now, with more boldness, 'do you voice unrecognized adumbrations of my own brain, or of some one not present in the flesh?'

"This time Ouija slid forward without hesitation.

" 'SHUSH,' it answered.

"Was there such a word? I could not find it in the dictionary and yet it seemed to have a vague connotation in my mind. Did it convey contempt—if so, of whom? I decided to ignore it and proceed on some—on any—hypothesis.

" 'Who speaks through you?' was my next question.

" 'SHMEESHMITE,' came back promptly.

"Here was something positive, something constructive. Shmeeshmite, shmeeshmite—Hittite, Perizite, Jebusite—

" 'Are you,' I asked, 'some one long dead, belonging to an age inconceivably distant, some one struggling against terrific odds to become articulate?'

' 'CLUBBB.' said Ouija. Was this Shmeeshmite for Yes or No? In either case, the third "B" seemed to me needlessly emphatic.

"I realized that I must either give up or again continue upon some hypothesis. So far, the conversation had lacked thrill, or anything approaching revelation. I was feeling drowsy.

" 'Spirit from an ancient world'—I tried now a tone of deep deference—'were you great or lowly, rich man or beggar man—' I checked myself on the point of chanting 'doctor, lawyer, merchant, chief,' and hastily added, 'prince, philosopher, or poet?' At my last word the little table undeniably tipped up under the pressure of my fingers.

" 'Ah,' I muttered, 'at last!' Then, continuing in my tone of deference: 'How can I best serve you? Speak!—I am your willing amanu—in fact, your secretary.'

"What followed was unquestionably surprising. I had settled back into my study chair, and I am not positive that my fingers still rested in their places; but, regardless of all that, the little table began a most energetic and surprisingly rapid dash from letter to letter. I must trust to memory—I had no means of transcribing—but you will grant that such an experience should make a vivid and lasting impression.

"This, to the best of my recollection, is what I read:

" 'Asprods have meant so more to me
  As I would hope they meant to you.
  Indeed 'tis not so much you do
As when or where that bids me be.
I sit and gurble ceaselessly
  And snook and snither, through and through.
Asprods have meant so more to me
  As I would hope they meant to you.

" 'I Alophar, O Pongeree!
  Whatever else we hold as true
  Is whilom folly; as a goo
Might twittle up and down a tree
Ere Cerberus had set him free.
  O Alawack! Oh two times two!
Asprods have meant so more to me
  As some day may it be to you!'

"I think that the poem left me in a sort of maze. At first I was at a loss for any form of acknowledgment of the communication.

" 'Thank you very much,' I murmured feebly. 'It seems to be some sort of a love-song.' Ouija was silent, and I felt that somehow more was expected of me. 'Parts of it,' I added, in a feeble effort at familiarity, 'like the curate's egg, parts of it are excellent!'

"You may believe my testimony or not, just as you like, but no sooner had I spoken than the Ouija bit one of my fingers. I don't know how, but the red mark was still there several hours later when I was relating this experience to my wife.

"You see I have reasons other than theoretic for my dislike of ouija-boards. I have sought no further revelation. What this one may mean Sir Oliver Lodge alone knows."

# The Cow as a Food Laboratory

The popular delusion that meat is of all foods the most important has been fostered so assiduously for so many years it has taken deep root in the public mind. Such unscientific writers as Woods Hutchinson, whose name is legion, and penny-a-liners of various descriptions, have kept the columns of the newspapers well filled in recent years with articles setting forth the imaginary virtues of beefsteak, mutton chops, and other forms of meat. But within the last five years the evidence against flesh foods as an essential of human dietaries has accumulated so rapidly that even the most enthusiastic partisans of flesh foods have found themselves compelled to recognize the weakness of their position. Under the heading, "The Cow as a Laboratory," the *Scientific American*, which formerly defended meat as a food staple, in a recent number of the *Scientific Monthly*, publishes the following editorial which is well worth reading:

"Dr. H. P. Armsby, an expert in animal nutrition, estimates that the energy of grain used in feeding the animal is recovered to about 18 per cent in milk for human consumption, but only about three and a half per cent of this energy reaches us in beef. An English official report states that the production of 100 calories of human food in the form of milk from a good cow requires that the animal be fed the equivalent of 2.9 pounds of starch. If a poor cow is maintained, the equivalent of 4.7 pounds of starch must be fed to secure the 100 calories in the form of milk; but if 100 calories in the form of beef is obtained from a two and a half year old steer, it has been found that the equivalent of 9 pounds of starch have been required to produce it. This would mean that a good milch cow returns 20 per cent of the energy value of that which she consumes, the poor milch cow 12 per cent, and a good beef steer but 6 per cent. Thus a poor milch cow is twice as efficient as a good beef steer, while the good milch cow is more than three times as efficient as a convertor of energy from the form unsuited to human uses to that which is available for human food.

"Professor Wood, a leading English agricultural expert, has determined that during the whole life of an animal, a cow returns one-twelfth as much food as she has consumed; this return being in the form of milk, veal, and beef. The beef animal returns but one-sixty-fourth, or but one-fifth as much during its whole life as does the cow.

"It is apparent from this that when the price for animal feed-stuffs soar, we should give more consideration to the efficiency of the laboratory to which we will take this raw material to be converted into human food. It also has a bearing upon the length of time the stockman can afford to fatten his animals for the market.

"These considerations are based on protein, fat, and carbohydrate, but when we consider vitamines and mineral elements the cow has an added advantage. When beef animals are fed upon hydrocarbons and the usual parts of grains which furnish vitamines, these are stored in the animal's tissues to but a slight extent, but they pass on in abundance to the milk so that coarse foods and grains not suitable for human food are converted into a form which makes it readily available in milk, though not in beef. Meat is also poor in calcium, which is comparatively abundant in milk.

"These facts would seem to support the contention that a greater use of dairy products, rather than an increase in the consumption of meat, would become an economical procedure both for American agriculture and for the American consuming public."

# The Zulu Bill of Fare

The Reverend A. T. Bryant gives the following account of the Zulu bill of fare:

"The primitive (and the present-day) Zulu child made the acquaintance of solid artificial food before he did that provided for him by Nature. He was no sooner born and washed, than spoonfuls of *amaSi,* mashed sweet potatoes, or thin porridge, were thrust into his capacious mouth and so into his still more capacious belly. It was only after the remnant of the navel-cord left attached to his body had withered and fallen off—which occurred, perhaps, after the expiration of five or six days—that the infant was permitted to approach the mother's breast. Even after that time, he still continued to have such feedings with artificial food thrust upon him three or four times throughout the day and once or twice during the nighttime. On these occasions, scraps of such thin material as boiled potatoes, and even mealie grains and beans, were pressed upon him and readily gobbled up. I should imagine a very large percentage of infantile mortality among the Natives could be attributed to overfeeding.

"From about the third year onward, this *amaSi* was generally taken in a thickened and more substantial form called *umVubo*. This was *amaSi* mixed up with a liberal quantity of crushed, boiled mealies (*um Cuba*) and the eating thereof was termed *uku-vuba*.

"There were only two meals a day, one in the morning about 11 o'clock, after the milking of the cows and the other in the evening before retiring to rest, say at about six or seven o'clock—Natives generally retiring about nine, and the young people earlier. The *amaSi* or *umVubo* meal was generally that of the morning. In the evening most commonly *izinKobe* would be served, alternated with any other of the various dishes described above.

"Such was the dietetic routine in universal vogue throughout the whole Native population of Zululand and Natal up to the year 1897, when Rinderpest came down like the proverbial wolf on the fold, and leaving nothing behind, worked such a tremendous, and in many respects deplorable change in the life-habits of these people. From that time *amaSi* ceased to be a principal food in the land, so that children born since then scarcely know its taste. These have been reared on sweet-potato pap and porridge made of finely ground maize and mabele. On the other hand, practically the whole Zulu race above the age of 10 or 15 years has been reared and grew up on a diet mainly consisting of milk curds and mealies. It would be interesting to know whether this alteration in the diet of these early people has wrought any significant change in their constitution or stamina. . . .

"The natural rotation of the season gave rise to a consequent regular variation in the Natives' diet. The springtime (the commencement of the rainy season) had scarcely arrived before all felt a spontaneous craving for fresh green food, after the long spell of grain fare during the winter. Women and children wandered over field and veldt in search of wild herbs. In each successive week throughout the first couple of months of spring, and even later, each individual usually managed to get perhaps three or four feeds of such fresh green stuff. Mothers in Europe had the habit of administering to their children at this period of the year doses of brimstone and treacle. The Zulus, too, had the custom at the same time of bracing themselves by liberal dosings with certain herbal tonics and alternatives, technically called *uDoloquina,* and of which various bitter herbs, such as the root of the *uZankleni* marsh-plant and the leaves of the *inTshungu,* provided a chief ingredient. With the progress of the spring, the new pumpkin plants provided a further supply of green food in the shape of their young tender shoots and leaves."

# Peanut Milk

Some years ago the editor of Good Health had the pleasure of addressing the students and faculty of the Tuskegee Institute and endeavored to interest them in the use of the peanut as a meat substitute in the dietary of the institution. Dr. George W. Carver, head of the Department of Research and Experiment, contributed to the August number of *The American Food Journal* an article on peanut milk. We quote as follows:

"Peanut milk consists of a perfect emulsion of the oils, fats, proteids, carbohydrates and some of the ash of peanuts. When properly made, it is one of the most perfect and stable emulsions. This milk can be made direct from the nuts or from the peanut cake or meal.

"The following comparison in percentage composition between cow's milk and peanut kernels will furnish much food for thought:

| | Water | Ash | Protein | Fiber | Carbohydrates | Fat |
|---|---|---|---|---|---|---|
| Cow's Milk... | 87.2 | .7 | 3.6 | .0 | 4.9 | 3.7 |
| Peanut Kernels | 7.5 | 2.4 | 27.9 | 7.0 | 15.6 | 39.6 |

"Since the quantity of fats, carbohydrates and proteids can be controlled, many different grades of milk may be produced; in other words, it can be made as rich or as poor as one's individual needs demand or fancy dictates. Some of the grades are practically identical in looks and physical character with cow's milk, and if you did not know one was peanut milk and the other cow's milk, the eye would never detect the difference. The keeping qualities are about the same as that of cow's milk; the less fat and proteids there are in it, the longer it will keep. When it sours, the clabber or curd is about the same in quantity and physical appearance as that of cow's milk. A rich, fatty scum rises on some of the grades, similar to that of cow's milk.

"The possibilities of peanut milk and its products are practically unlimited. Some of the possibilities are:

"For culinary (cooking) purposes the sweet and the sour milk can be used in the same way as cow's milk and makes a very satisfactory substitute.

"In taste there is a great variation, ranging from almost or quite no taste to the most pronounced flavor.

"The curd can be converted into many fancy types of cheese, such as pimento, nut sage, tutti-fruiti, chocolate fillers, cream bonbons, etc., etc.

"Many fancy salads can be made from these curds, as well as a superior body for mock meat dishes.

"The rich cream may be used on fruit, in coffee, on breakfast cereals, etc., and makes a most acceptable substitute for the cream from cow's milk. It also makes the most delicious ice cream, smooth in grain, fine in appearance and of a wonderful flavor. Lemon, orange, pineapple, mint, wintergreen, vanilla and nearly all of the fruit juices blend with it beautifully and without curdling.

'The buttermilk has a mild, pleasing acid taste, closely resembling fresh buttermilk made from cow's milk. A very popular drink for soda fountains, hotels, restaurants, etc., is produced from this milk.

"The whey, which is a very pretty pale straw color, makes a delicious beverage when iced and flavored to taste. It has but few, if any, superiors for making fancy fruit punches.

"The sweet milk, when used in making yeast bread, gives the loaf or rolls an exceedingly rich flavor, very similar to the much-prized milk bread. It should prove attractive to bakers as well as the home, for making bread, rolls, cakes, etc., etc.

"It is excellent for creaming vegetables. It does not lose its milky consistency, even though the vegetables are cooked in it.

"Since this milk is a purely vegetable product, it is not only free from, but may be kept free from harmful germ contamination, ranging as it does so high in proteids and carbohydrates, together with the interesting fact that the peanut is eaten, relished and easily digested by everybody wherever it is known; therefore, as a nourishing drink for children and invalids, it will have but few, if any, equals.

"As a food for young growing stock, there is an equal possibility.

"The milk may be condensed or dried, the same as cow's milk. Butter can be made from the milk, but is more easily and satisfactorily made from oils and fats direct.

"It takes but a glance at the above facts to convince the reader that there are practically limitless possibilities for peanut milk. Much study, experimentation and demonstration are necessary to develop all of its many good qualities; and we believe that chemists, dietitians and food specialists will continue to develop this wonderful product until its superior characteristics force it into every home."

# Health as a City Aim

[The following address was by request delivered by the editor of GOOD HEALTH before the Kiwanis Club of Battle Creek on the occasion of a banquet given the Club at the Battle Creek Sanitarium.]

Members of the Kiwanis Club: I welcome you here today as representatives of the healthy people of Battle Creek. We have frequent visits from the sick, but it is a red letter day when we have an opportunity to entertain such a company as this which represents the energy and enterprise and manly vigor of our fair city. We esteem it a special pleasure to have you with us as our guests, and trust you will be so well served through the skill of our students of home economics, under the supervision of their dean, Miss Cooper, as caterers and culinary experts, that you will not only survive this occasion but will be able and willing to come again. I am sure the young ladies who are acting as your entertainers appreciate the opportunity of testing their powers upon a group of able-bodied stomachs before taking the responsibility of catering to our invalid guests. And they will take care that you survive the present experiment so that you may be able on some future occasion to serve again in like capacity.

There are certain things some of you have missed from our bill of fare. You may have heard the story of the man who told the colored waiter in a restaurant to duplicate the order just given by a friend but to eliminate the eggs. The waiter returned with the report that the cook said the eliminator was broken so that he would have to have the eggs boiled, poached, scrambled or fried. The eliminator in our kitchen is always in working order and keeps off our tables everything which does not belong in a biologic bill of fare.

Across the road, a little way up the street, is a building erected about twenty years ago in which an attempt was made to run a sanitarium without an eliminator. The scheme did not work. The promoters sunk half a million dollars and closed up. We installed our biologic eliminator and the building has been full ever since. This idea of living biologically is the foundation stone of this institution. Whatever success we have attained is wholly due to the fact that we have given prominence to health promotion by right living as well as by application of the science and art of medicine and surgery. And I want to improve this opportunity to impress the fact that health promotion is just as fundamental a factor in the permanent building up of a city as in the development of a successful sanitarium.

Said Gladstone, "The first duty of the state is to conserve the lives and health of its citizens." The same is true of a city.

Under Lycurgus, ancient Greece attained for a time the noblest example of a perfectly organized state afforded by all history, and health was made the corner stone of community life. Beginning at birth, the habits of each individual were rigidly controlled in such a manner as to insure the highest degree of physical vigor for every citizen. The mosquito with its insidious parasite destroyed the splendid civilization of Greece, and Roman militarism belittled and adumbrated the average citizen until the race barely escaped extermination through the devastating plagues which, fostered by ignorance and insanitation, depopulated continents and wiped out provinces and left to us a legacy of disease and degeneracy which, in spite of all that modern sanitation has done, is still carrying us rapidly on down the hill of race degeneracy.

Modern sociology has found the answer to that age-old question, "Am I my brother's keeper?" We now know only too well that if we allow our brothers to suffer from smallpox, leprosy, vice diseases, intemperance, insanity, typhoid fever, tuberculosis, we must pay the bill, and we can not escape the penalty of our neglect. We must inevitably suffer with him. Every citizen sooner or later pays part of the cost of every day's loss of time and every dollar's expense through sickness. City health, like personal health, is a commodity. We can have as much or as little as we like. We can purchase a high death-rate or a low death-rate, as we choose. The low death-rate comes high but is an investment which yields big dividends.

City building in America at least is a modern idea. In early times a city sprang up in haphazard fashion. Wherever a squatter happened first to bury his axe in some forest monarch or thrust his plowshare into the sod, there the city began. Now we are beginning to do things systematically. A man or a group of men deliberately select a site for a town and let contracts for the building of homes, the erection of a city headquarters and the laying out of parks and other public grounds. We are gradually learning the importance of controlling the conditions under which men and women are asked to live in community life. We do not hesitate to devote time and money freely to the beautification of our homes and of our city, but a sort of camouflaged piety leads us still to leave largely to the Almighty the care of our lives and health, and then complain of the sad dispensations of Providence when the death-rate is high.

The most successful city, the most desirable city in which to dwell, is the one which secures to each of its citizens the fullest life, the largest measure of health and happiness. For the attainment of this end nothing is more essential than the promotion of health. It may easily be shown that nearly all moral and social evils are the natural products of disease, or at least greatly aggravated by it. In city life the practical promotion of health presents two phases which may be designated as elimination and construction. Without undertaking to discuss categorically the health needs of a city or community, let us take a brief survey of our city and note what may be done for its betterment in the way of eliminating conditions unfriendly to life and health on the one hand, and on the other hand what may be done in a constructive way for the promotion of the health and vigor of our citizens.

A good many years ago when I brought to Battle Creek the first compound microscope, I used to have frequent evening exhibitions to demonstrate some of the wonders of the microscopic world, and among other things showed germs in bad water. A lady said to me, "How large are these awful germs?" I replied, "So large that 20,000 of them placed close together in a line would make a row an inch long."

"What," said she, "no larger than that? Oh, well, I am not afraid of those little fellows." On one occasion I made an earnest appeal to the city fathers for a better water supply, as the city was then well covered with cesspools and vaults, and the water supply was derived from dug wells, and as a consequence extensive outbreaks of typhoid fever were very frequent. I thought I had made quite an impression upon the board of aldermen until one of them, who had M. D. attached to his name, after viewing through the microscope a fine assortment of animal and vegetable organisms, chasing one another about in a drop of water obtained from a public well, said, "Oh, that is nothing; those things are the natural life of the water. Without them the water would be dead and unwholesome. All good water has them things in it." In those days the germ theory had not yet gained general acceptance among scientific men, but today the humblest citizen, even the school boy, knows and to some degree appreciates the destructive potency of germs; and yet we tolerate a condition of our public streets which in summer-time is a great and constant menace to life and health. The automobile has improved the situation very considerably by lessening the number of horses on our public thoroughfares, and consequently the amount of dangerous filth. But the amount of filth daily deposited upon our streets and ground into dust to be wafted into our homes and deposited upon carpets, rugs, curtains, tables, shelves, even contaminating our food, is at all times considerable, and when summer breezes blow, enormous.

Street dust abounds with the most deadly sorts of germs. Every dollar expended in keeping city streets clean and city air free from death-dealing organisms will bring large returns in life and health-saving. Young children are perhaps the greatest sufferers from this source. Creeping about the house, the little one soils its hands with the filthy germs swept into open doors or windows, or brought in on the soles of boots and shoes. From hand to mouth is a short road, and thus the little one becomes inoculated with the pernicious bacteria which give rise to infantile bowel troubles, colitis, and resultant mischiefs which often lay in infancy the foundation for life-long invalidism.

Good municipal housekeeping is one of the most efficient methods of lightening the work of housewives and lessening the prosperity of doctors and undertakers. Our city commission will unquestionably gladly give us just as clean a city as we are willing to pay for, and it can not require any high degree of intelligence to appreciate that it is much more profitable to pay small bills to street sweepers and scavengers than to pay big bills to doctors, nurses and undertakers. Thanks to the foresight of an intelligent board of public works and an able city engineer, we have an exceptionally excellent water supply; but in spite of the great improvement which has been made in our milk supply, there is still great room for progress in that direction. Our city commission is certainly to be greatly commended for the action it has recently taken in relation to the testing of cows for tuberculosis. But tuberculosis is by means the greatest menace in our milk supply. The colon germ and other bacteria, when introduced into the body, grow and multiply and produce poisons and cause colitis and bowel disorders of various sorts, responsible for much more sickness and many more deaths than can be laid to the charge of the bovine tubercle germ. Chiefly to this cause may be attributed the fact that the mortality of bottle-fed babies is more than five times that of infants which receive their natural sustenance. The average commercial milk, as sold to the city, contains anywhere from 10,000 to 150,000 germs in every drop. It is true that most of these germs are ordinary sour milk germs, and if the milk is left to itself, no putrefactive changes occur. The milk simply sours. Putrefaction is prevented by the presence of sugar of milk to the amount of two or three per cent; but when this milk is eaten by an infant, the sugar of milk is absorbed, leaving behind the casein and the colon germs and other pernicious organisms which in the absence of sugar of milk, develop with astonishing rapidity and produce poisons in enormous quantities.

The problem of clean cow's milk is one of the biggest health problems connected with our community life, and unfortunately this problem has not yet found its perfect solution. Certified milk and Pasteurized milk are as yet the only alternatives. But Pasteurized milk produces scurvy and certified milk is for the poor prohibitive in price; and so from force of habit we go on eating with our milk quantities of stable filth and barnyard contributions of various sorts. It has been estimated that in a city like Chicago, many tons of manure are annually consumed with the milk supply. Through this source our interiors become inhabited by myriads of wild bacteria which drive out the friendly, health-promoting germs with which Nature inoculates us at birth, and which initiate through autointoxication the majority of the chronic maladies with which we suffer.

No city with which I am acquainted at the present time has anything like an adequate system of milk inspection. Battle Creek is in this respect no worse off than other cities, but in fact our inspection system is scarcely better than a farce. For example, if you ask our health inspector, "What do you do when you find out that a specimen of milk collected from the distributor contains such quantities of germs that you consider it unfit for human consumption?" he will tell you, "We do nothing with that particular lot of milk for the reason that before we discover that the milk is alive with bacteria, the milk has already been eaten." After the sample is collected, cultures are made, and by the next day when the cultures have grown and the inspection shows unusual contamination, the milk has in the meantime been consumed. If in the summer time the inspector finds that the milk has not been properly cooled, and lacks proper keeping qualities, and so prohibits its sale, the producer has only to take his milk home, allow the germs to continue to grow two or three days longer until they are a hundred times as numerous as before and the milk well soured, and he is then permitted to bring the same, once-condemned milk back and sell it in the form of cottage cheese or buttermilk; and in fact no harm is done and no fault should be found with the inspector; but the system is wrong, since it affords no opportunity for discriminating between different kinds of germs with which milk is contaminated. The ordinary, so-called sour milk or buttermilk germs are harmless, but the colon germs, even though present in comparatively small numbers, may be the cause of prodigious mischief and, the writer believes, are responsible for the death of more than 100,000 infants in this country every year. The place to attack the milk problem is at the source of the milk at the farm. Every producer of milk who is permitted to send his product to this city should be kept under constant supervision. Not only his milk, but his dairy and everything connected with it should be thoroughly inspected weekly, or even more frequently if necessary to secure the same degree of cleanliness in the collection and distribution of this highly important foodstuff that is used in the preparation and serving of any other article which enters into our daily bill of fare.

The whole system of milk production and distribution needs reconstruction, and it is hoped that in the near future means may be found for overcoming the obstacles which to date have proved to be insuperable.

Here are other things that are needed:

A health survey should be made at least twice a year. A monthly survey would be none too frequent. This survey should include the careful inspection of every household and every place of business in the entire city. Streets, vacant lots, cellars, back yards, barns, shanties—every place should be included in this health survey, and a record should be made of the conditions found and of the changes necessary, and at the next inspection a similar record should show progressive betterment. Failure to improve should be punished by increased taxation or some other adequate penalty.

Sometime we shall become sufficiently civilized to include in this survey the man himself as well as his domicile, and every man, woman and child will be considered of sufficient value to the state to make it worth while for the state to provide free medical examination for every person not willing or able to pay for the same.

In the meantime, while slowly learning to appreciate the value of human life, we ought at least to provide ample dispensary facilities and an adequate health inspection of our school population, a matter in which we are behind every other city of our size in the state. We are making progress in this direction, however. Our excellent school board has provided an able dentist, Dr. Olson, who is making diligent inspection of the teeth of our school children. She has already inspected more than one thousand children and is finding abundant opportunity for the exercise of her professional skill in saving the children, not only from the inconveniences which arise from the loss of teeth, but from the greater evils which grow out of focal infection in the mouth, such as rheumatism, appendicitis, gall-bladder disease, gastric ulcer, neuritis, and possibly also a long train of mental and nervous maladies.

But it is an injustice to our children who are soon to fill our places in all the functions of community life to permit them to grow up without the benefits of the scrutinizing care of the trained health inspector; and it is to be hoped that through the influence of this body and other groups of citizens, our school board may be made to understand that every step they find it possible to take in the direction of supplying adequate health inspection of our school children, will have the approval of the vast majority of our intelligent citizens. We are getting so far behind other cities of our state and of the whole country that we shall soon be pointed at as an example of delinquency.

There are numerous other matters that are deserving of our attention. How are we disposing of our garbage? And what attention are we paying to food inspection? According to the chief of the U. S. meat inspection bureau, only about one-third of the meat eaten in this country is inspected. Every animal slaughtered should be examined before it is killed and afterward, and the examination should be made with sufficient care to make certain that the animal is not suffering from disease at the moment of its death.

The flesh of animals is an inferior food at best; but if in addition to its natural objectionable features, it is contaminated with disease, it becomes an active menace to health. When a school teacher in a Southern state asked a little boy why he had not brought her the shoulder of pork which had been promised her a week or two before as a contribution toward her salary, the little boy replied, "Dad did not kill the pig." "And why not?" asked the teacher. "Because he got well."

It was a different reply that a Chinaman gave to the lady whose suspicion was aroused concerning the source of a certain delicious sausage which her cook had concocted. Pretending to more knowledge than she really possessed, the lady said, "Joe, why did you kill the dog?" Joe promptly replied, "I didn't kill him. I found him dead." No consumer of meat knows exactly what he is eating. In Michigan, and in Battle Creek, at the present time, any old farmer may kill or pick up dead any animal, prepare it, and bring it to market, and sell it to anybody who is willing to buy, with no one to molest or make him afraid unless somebody gets sick or smells something wrong. The situation is disgraceful. The government statistics show that sickness prevails among domestic animals even more extensively than among human beings. It is known that among hogs trichinae infection has become practically universal, and tuberculosis is almost as rife.

Meat inspection is urgently needed. Food inspection as at present carried on affords only a moderate degree of protection. In the case of meats there is practically no protection at all.

An American statesman defined an optimist as a man who makes lemonade out of the lemons handed him. Battle Creek has one of the best opportunities to go into the lemonade business of any community in the world. One of the worst lemons with which any community ever comes in contact is chronic tuberculosis. Up to within a few years we have made some progress in controlling this disease which carries off every year 150,000 of our finest citizens. This malady alone slays one person out of every four who dies between the ages of fifteen and forty-five. Between the ages of five and fifteen years the mortality rate amounts to scarcely more than three in ten thousand, or one in every 330. Why is this dread malady eighty times as fatal between the years of fifteen and forty-five, as between the years of five and fifteen? For the reason that it is a chronic malady, and while the seed is sown in childhood it comes to full fruitage in later years.

Now it is well enough known that tuberculosis is a house disease. This malady is practically unknown among people who live out-of doors. When this continent was discovered, tuberculosis was an unknown disease among the North American Indians. Since they have become house dwellers, tuberculosis has become such a devastating plague among them that it has nearly exterminated the aboriginal race. The white man has become, through heredity, partially immune to the disease, so that it makes slower progress. Beginning in childhood, the disease often remains latent until later years, when by lowered resistance resulting from overwork, bad ventilation, loss of sleep, poor food or acute illness of some sort, or other debilitating influence, an opportunity is afforded for the disease to attain the ascendency. The vulnerability to infection with the tubercle germ diminishes with advancing years, hence the importance of the protection of children in the early years when the seeds are most likely to be implanted.

Some years ago it was discovered that the monkeys in the animal house at Lincoln Park, Chicago, were rapidly dying off with tuberculosis. When the attention of Dr. Evans, at that time health officer, was called to the fact, he at once put the monkeys out of doors. The weather was cold, and the poor monkeys shivered and protested so vigorously that the sympathies of the public were greatly roused, and bitter complaint was made of the cruelty of the keeper in leaving the poor monkeys out in the cold. But notwithstanding, the monkeys thrived. The sick monkeys recovered and tuberculosis ceased to be a menace.

Most of us are familiar with an analagous experiment which has been made, not only in this city but in many cities in most civilized lands. In our open air schools may be seen any school day numerous examples of children recovering from tuberculosis through the influence of fresh air. The old Athenians were wiser than we. They recognized the prophylactic value of fresh air as well as its curative value, and placed all their children in open air schools. The Athenian boy began his school life at seven years, but his schoolhouse was a playground rather than a prison like the modern schoolhouse. He devoted a few hours to study under the trees, learning to write with a stick in the sand, and observing the forms and activities of the animal and vegetable life about him, but most of his time was spent in active play of a sort calculated to develop a vigorous and symmetrical body. As he grew in years, his exercises became more vigorous, until manhood found him a splendid athlete and possessed of a vigor of mind and body such as the world has never seen equaled since.

Why should not every schoolroom be a fresh air schoolroom? Why should we wait until disease has obtained so strong a foothold that it may be impossible ever fully to eradicate it? Everybody knows, nowadays, that the outdoor life will cure tuberculosis. Half the cases that visit our state sanitoriums are discharged cured.

We need not only fresh air schoolrooms, but we need enormously increased facilities for recreation, playgrounds, grounds for sports, public swimming pools, outdoor gymnasia and other facilities for promoting and encouraging an active out-of-door life.

Tuberculosis is no longer retreating. It has again begun a forward march. This was to be expected; indeed I was condemned as a pessimist years ago because I predicted that the decline of the death rate from tuberculosis was only temporary. For several years the death rate from this cause has been increasing, and it will probably go on increasing and at an increasingly rapid rate. Measures heretofore taken for combating this disease are superficial and inadequate. They have consisted chiefly of lessening contact with the source of infection. But the infection is so widespread none can escape it. Every one becomes infected. No adult who has attained the age of twenty-five or thirty years is wholly free from it. The only hope for the mastery of this malady is to be found in increasing the vital resistance of the whole population by fresh air sleeping, out-of-door life and good nutrition.

The battle against tuberculosis covers the whole ground of personal hygiene and public sanitation; and if we will in earnest take up the fight against this greatest of all plagues which afflict humanity, we shall adopt a program so broad, comprehensive and thoroughgoing that it will fortify us against every physical ill to which human flesh is heir. Such a campaign will necessarily be based upon widespread education. The battle must be carried into every home, into every factory, every place of business.

A great campaign of education must be inaugurated. A health center should be established, with which should be connected welfare stations. Free classes for mothers should be conducted, not now and then, but all the time. House to house instruction should be given in the fine art of healthful living. Every girl who reaches the grammar grades in our public schools should receive instruction in the care of infants. We should not rest content until we know that every mother in Battle Creek knows the essential value of milk as a food for growing children, and until every home is supplied daily with a quart of milk for every child. Without milk the ordinary diet is incomplete. There is a lack of bone-making and body-building material. Meat does not supply this lack. It contains no lime and it is lacking in other salts. It is almost equally important that mothers should know the value of the green leaf, because of its wonderful growth-promoting qualities. The same subtle hormone which gives the green bud the power to expand and send out its leaves and shoot up its stem, is needed to maintain the growth and repair of animal tissues.

Milk and dairy products are, with the green leaf, almost the only sources of this essential element of nutrition. This simple fact, only recently unfolded by experimental research, is at present known to but few mothers, and their ignorance is responsible for a large part of the physical inferiority, vulnerability to disease, and general inefficiency which we see about us on every hand.

A crying need of our city is a hospital or sanitorium for the treatment of pronounced cases of tuberculosis. It is not to be expected of the sanitorium that it will conquer tuberculosis. It is simply a life-saving station for the benefit of those who otherwise are without hope. It also to some degree restricts the dispersion of the germs of tuberculosis. Perhaps its most important function, however, is the education of individuals who are infected with the disease, and the training of such persons in habits of life which will enable them to successfully combat this dread malady.

A tuberculosis sanitorium is an educational center, the influence of which goes out into the whole community. It is in no sense a menace, even to its immediate surroundings, for the reason that the care exercised to prevent scattering of the infection is so great that the immediate vicinity of such an institution is safer than almost any place to be found where human beings congregate.

If this Kiwanis Club will get behind this sanitorium project and push it to completion, it will be one of the finest monuments which this body of able business men could plant in the city of Battle Creek, and is certainly one of the most worthy objects to which you could give your attention.

But I fear I am wearying you. I shall not tax your patience to dwell upon the importance of maintaining with increasing vigor the battle against vice diseases and infectious maladies of all sorts which are ever present with us in this community. I commend to your special consideration the organization of a permanent health campaign in this city for the purpose of making every man, woman and child acquainted with the principles of right living and the adoption of such plans as will create an interest in and an enthusiasm for physical fitness. Health contests, health exhibitions, and prizes for physical perfection and physical improvement are among the measures which should be used for the promotion of health ideals among our citizens. By every possible means we ought to seek to give to Battle Creek and its citizens such a stamp of health superiority as will justify us in claiming our city to be the healthiest city in the world. Some time ago in a controversy about the advantages and disadvantages of matrimony, it was claimed that married men live longer than bachelors. A bachelor retorted that the life of a married man was not longer but only seemed longer. Life in Battle Creek ought to be longer while seeming shorter, because having in it a little more zest, a little more joy, a little more of the richness and fullness which are the natural product of physical soundness, than any other spot on earth. Battle Creek ought to be known everywhere as a great health center. We have knowledge enough and light enough not only to instruct and show ourselves the way to a veritable mountain top of health, but to illuminate the world, and make all America, all the world in fact, turn their faces this way.

With our wonderful climate, our remarkably low death-rate and the great start we already have, the people of Battle Creek have an opportunity, if they care to improve it, to make Battle Creek a shining spot upon the map of North America, and *the health center of the world.*

# Americans Losing their Longevity

Professor C. H. Forsythe, in an article entitled "Trend of Longevity in the United States," calls attention to the fact that the longevity of the native American is lessening at the rate of one year every decade. This is not surprising. The average American is doing so many things that are inimicable to health and longevity that the wonder is that he is not shortening his life at a much more rapid rate than he is. And even at the rate of one year from every ten years, the abbreviation of life would amount in one hundred years to ten years, and in five hundred years would wipe out the whole life span.

It is high time that not only Americans but all civilized people begin to give serious attention to the cultivation of health, longevity and race improvement. If this is not done, the outlook for the human race, at least the civilized part of it, is certainly discouraging.

The examinations made for admission to the Army showed that at the age of twenty-one 50 per cent of the men examined were too feeble to be made fit to fight by any amount of training; at the age of 30 the proportion of men unfit for training was 78 per cent, or nearly four-fifths. These figures are given in the report of the Provost Marshal General of the United States Army. Evidently we are already far advanced on the road toward race extinction.

# Department of Eugenics

Conducted by WILHELMINE E. KEY, Ph. D.

# Dowering the American Child

A nation's greatest wealth lies in her children. There was a time, not so many generations ago, when, rated in dollars and cents, America was comparatively poor. The vast resources of the West had not yet yielded their wealth to the pioneer. For a century and more these resources beckoned to the more venturesome and ambitious of the seaboard settlements, and in canvas-covered wagons or flat-bottomed boats they made their way into the heart of the continent. Here land was cleared, villages sprang up as if by magic, and in due time institutions were founded which reflected the ideals of the homes left behind.

### Large Families the Rule in Pioneer Settlements

The traveler through these regions found the pioneer cabins swarming with children. There was plenty of work for all on the newly cleared farms, and children were an asset rather than a liability in those days. The young people married early and in their turn reared large families of children. If we compare the branches of such families we find that in many instances those who came West had twice as many children as those who remained "back East." For a hundred years, the proportion of children in these younger States has been from 30 to 100 per cent. greater than in the States along the Atlantic seaboard.

These children were dowered with the same characteristics that had made the history of the original colonies so phenomenal. And here again the struggle to subdue primeval nature, the sharp contacts of pioneer existence, brought to the fore all that was most virile in the makeup of the individual. In the economic success and intermarriage of such individuals we again have the coming together of many vigorous strains which have given the genetic foundation for the tremendous development of the West in the past hundred years.

### Phenomenal Careers of Pioneer Boys

Our popular stories of the canal boy and the rail-splitter who became Presidents reflect the common belief that there lay in the raw youth of those pioneer days the power and the potentiality to fill the highest offices of the land. Not only did these youths become presidents, senators and judges, but they were the stuff of which our railway magnates, steel kings, editors, authors and teachers were made. In family after family, as we trace their history, we find the great majority doing well for themselves. They prosper and in many instances, amass fortunes; they achieve eminence in the professions. Of those who did not win the great prizes, many gained the lesser ones, so that ability and ambition had their honest reward.

### Depriving the Land of its Best Fathers and Mothers

For many years now there has been a drift eastward quite as noteworthy as the westward march of a century ago. There, the wealthy build imposing mansions, but these mansions are empty of children. In a total of fifteen blocks on Fifth Avenue, in a recent survey, only fifteen children were found. Another block in the same city, having a total of sixty-three families, could show less than that number of children for the entire block. Less than one child to a family!

We might imagine a happier fate for a child than to be heir to some of the predatory instincts that amassed certain of the colossal American fortunes, did not the scholarly lines of American families tell a story hardly less serious.

James McKeen Cattell has investigated the families of 865 leading scientific men in this country. He finds that the parents of these men had on the average families numbering five children. Those belonging to the agricultural classes had larger families than those belonging to the manufacturing and professional classes. Furthermore, the fraternities of scientific men from the North Central States were larger than those of the North Atlantic States. Coming now to the children of these 865 leading scientific men, we find there has been a marked decrease in the average number of children. In a single generation, this average has fallen from five to two. So that as far as these families are concerned, the traits which made for achievement in the sciences are less than half as well represented in our population today as they were a generation ago.

Statistics from our colleges and universities show a corresponding rate of decrease for other scholarly lines, and special studies tell a similar story for the families that attained eminence in statecraft.

A writer in the *Journal of Heredity* has estimated that with their present low birthrate, the direct descendants of those who came in the Mayflower will be so small in numbers that it will soon be possible to put them all into a boat of the same size. This contingency is possibly not as serious as it would at first blush appear. The native stocks have largely intermarried with the best incoming stocks. It is estimated for example that the blood of the twenty-thousand Puritans who came to New England in the early part of the seventeenth century now flows in a fourth of the American people. The serious phase of the situation lies in the fact that in these descendants, too, the birthrate has suffered marked decrease in recent years.

On the other hand, the defective and degenerative classes suffer no such curb on their multiplication. A survey made by the writer some years ago in a certain section of Pennsylvania revealed centres of degeneracy and defect having as high as thirty to fifty per cent of the inhabitants either feebleminded or criminalistic. These families showed a truly appalling rate of increase. Here the defective mother had an average of seven children as compared with less than three for the normal mother in the prosperous farming sections adjoining. It is true that more of the children in the former type of family died from one cause or another. But even this left the survival ratio of the children of the feebleminded mothers, children who were being reared under conditions which would certainly aggravate their original dependency and delinquency, more than twice as great as that for the normal children of normal mothers. The survival ratio in the former type of family was 5.5, in the latter, 2.5; that is, the defective and degenerate are increasing at more than twice the rate of the prosperous and law-abiding.

### Genetic Classification of American Families

We may make a classification of the American people based on the strains to which they belong as follows: At the top are those families of superlative worth—we may call them aristogenic—which have produced the great majority of our leaders in education, literature, finance, politics and statecraft. Such contain many members of lesser eminence and grade into families of Who's-Who rank, families showing much special ability, but few of whose members have achieved national leadership. Next comes the large middle class, many of whose members have special skills and aptitudes. Through fortunate matings and improved social opportunity, they may recruit the classes above them. Through unfortunate matings and often in spite of fair opportunity, their children recruit the classes below them. These are the dysgenic classes to which the Jukes, the Kallikaks and the Hill Folk belong. Here belong, too, many lesser tribes, not so infamous perhaps, but none the less a menace to healthy national growth. These, unless they are prevented, proliferate their kind out of all proportion to the self-respecting, law-abiding elements of our population. They contaminate the better elements of society, and through their crimes and misdemeanors become a serious drain on the resources of the country.

The preceding is necessarily a rough classification. Further, the limits of these classes are not fixed, but there is a certain amount of passing from one class to another. Family history studies have been carried far enough to show that different families show a considerable range of variation in social value from generation to generation, largely traceable to the types of marriage made. In general it may be affirmed that American civilization will be carried forward in measurably the same proportion as the superior strains reproduce their kind or are augmented through eugenic matings in families having many sound positive traits.

Unless the child is dowered with the right heritage, though our educational systems may be ever so complete, their effect will not be to make a good citizen of him. The low birth-rate among the better classes is in effect robbing the nation of its best parents. In robbing the nation of such parents, we rob the children of their just heritage of right instincts, aptitudes, and all the multitude of special abilities which have so distinguished Americans as a people.

### Why Rome and Spain Fell

We are fond of pointing to Rome as an example of the dire effect of war in destroying the quality of a people. Rome needed soldiers for her numerous military outposts. She therefore selected her strongest and best to swell the Roman legions, leaving the inferior at home to become the parents of inferior children. At the same time, the standard of motherhood declined. Marriage was dishonored, and when entered upon, too often the Roman matron failed in her natural duties as mother. So the living foundations of the Empire were undermined and Rome fell a victim to her more virile neighbors.

What war and the enjoyment of the spoils of war did for Rome, ecclesiasticism did for Spain during the Middle Ages. In the words of Francis Galton, the founder of Eugenics: "Whenever a man or woman was possessed of a gentle nature that fitted him or her to deeds of charity, to meditation, to literature or to art, the social condition of the time was such that they had no refuge elsewhere than in the bosom of the Church. But the Church chose to preach and exact celibacy, and the consequence was that these gentle natures had no continuance; and thus, by a policy so singularly unwise and suicidal that I am hardly able to speak of it without impatience, the Church brutalized the breed of our forefathers. She acted precisely as if she had aimed at selecting the rudest portion of the community to be alone parents of future generations." Added to this we have the influence of the religious persecutions in bringing thousands of thinkers and men of political aptitude to the scaffold or imprisoning them through a larger part of their lives. Thus the children of following generations were deprived of the dower which the intelligent, the truth-seeking and the fearless, through parenthood, might have bestowed upon them.

### The Case For America

What war and ecclesiasticism did for Rome and Spain, the causes which limit the birth-rate of the better endowed are doing for America today. These causes are various. Among them we may name: (1) Artificial and false standards of living which make it impractical to have large families. (2) The increased cost of children due to various economic factors, which limit the families of those whose standards are worthy. (3) A cynical or an indifferent attitude toward marriage and parenthood engendered by wrong education. (4) The trend cityward with its attendant sterilizing effect. The operation of these and other factors is limiting the families of socially effective strains to one or two, when to preserve the balance of such strains in a population increasing at our present rate, the surviving children in each family should be at least three.

It is right here that Eugenics makes its ethical and patriotic appeal. There is a laudable pride in family achievement to be invoked in the American of today for the continuance of all those qualities which make for social excellence. Social excellence in its numerous types in a civilization such as ours, is insured by a wide range of possible combinations of traits. We stand in little danger from what may be called the ingrowing eugenic conscience. The few far-seeing may effect in time legislation which will create economic conditions favorable to the large family, but along with efforts toward these ends, there should go among the many a campaign against false standards of living. We need right standards of home and parenthood, the development of a national eugenic conscience which would regard as the most vital part of patriotism the endowment of the American child of the future with the best possible heritage of gifts to be used in the service of humanity.

# Standardizing State Eugenic Effort

Since the rise of interest in Eugenics, many States have taken measures in the direction of safe-guarding the human germ-plasm. In some States, these so-called "eugenic laws" have been of doubtful wisdom and in most cases more or less difficult of administration. Here and there, states have authorized surveys of a portion or the whole of their population in order to ascertain the proportion of the socially unfit to the self-supporting and self-respecting classes of the population.

In nearly every instance, interest has centered mainly in the defective and delinquent classes. There has been increased effort to keep these from mixing with the general population, especially during their reproductive period, and so propagating the defects characteristic of such offenders.

As this work has proceeded the problems that are bound up with it have become multiplied. There has been, too, a growing realization that much of the effort has been ill-advised and wrongly directed. As surveys have been extended, it has become apparent that the State will not be able to give custodial care to all who, under present economic conditions, fall below the line of self-support. There is need of discovering standards of State eugenic effort and applying these to the varying conditions encountered in individual States.

A promising attempt along this line of standardization is offered by Chester L. Carlisle, until recently director of the Bureau of Analysis and Investigation in the Department of Charities and Correction for the State of New York. Bulletin No. 13, entitled "The Problem of the Mental Defective and Delinquent," issued by this Bureau, outlines a comprehensive program for the care and treatment of these classes of our population. His plan gives as chief objectives in this work: "(1) The greatest good of the individual case; (2) The highest type of care, treatment and research, in order that latent capacity may be developed; (3) The conservation of the social possibilities of persons who otherwise would become economic wastage; (4) The protection of society from undesirables. That Dr. Carlisle approaches these problems from the biologic and genetic side will be gathered from the following citations: "If conduct is to be considered in a broad way as the final resultant of mental actions carried out through our physical agencies, then we begin to understand how an individual showing anti-social trends as a result of inadequate reactions to mental conflicts becomes delinquent. The forces of heredity have been widened in their significance by the investigations of later years. We no longer think of the inheritance of similar characteristics as such, but rather that the presence or absence of specific determiners in the germ-plasm leads to the development of individuals destined to produce certain types of reaction in symptom-behavior. Through the inter-relationship of all these heritable factors which enter into the personality make-up of any unit of any certain family, one sees how by changing the number and value of the determiners, a certain family tree may show one or all of the various types of mental defect or mental disorder, either in the sense of quantitative intelligence defect, affective imbalance, epilepsy, or the more pronounced make-up deviations expressed as a constitutional type of psychosis, or in delinquency or dependency (inadequate economic reactions)." Concerning the duty of the state toward those whose ability is below the average, he says: "In a sense the state is not particularly interested in the individual, even though he may seem mentally deficient, provided his affective reactions are stable and his conduct represents constructive economic efficiency, even though in a humble manner. So long as he does not, through conspicuously bad mating, increase the virulence of his strain in the body politic, and develops no other attitude definitely anti-social, his mental defect is of academic interest only. Such stable types of mild mental defectives are found doing the humble work of the world and have a distinct value in the social structure. Nevertheless, the state has a right to know, and it is its duty to ascertain, the exact number of all such types as far as possible, in order that it may record their whereabouts and curb the possibilities of their developing by indiscriminate mating, geographical foci of mental defect. To this end there is the pressing need of a system of state-wide registration of defectives and delinquents."

# The Eugenic Research Association

This is a national organization for the promotion of eugenic interests which, a number of years ago, grew out of the informal conferences of students of human heredity and workers in related fields. Its annual conference, held in June, takes the form of an out-door meeting on the beautiful grounds of the Eugenic Record Office at Cold Spring Harbor, Long Island. The program for this year's meeting, which follows, is indicative of the broad bearings which eugenical activity is assuming in this country: President Paton's address: "Democracy's opportunity." R. H. Johnson: "Some eugenical aspects of the distribution of wealth." Madison Grant: "The present racial outlook in the world at large" A. H. Estabrook: "The eugenical bearing of psychological work in the army." A. J. Rosanoff: "Preliminary report of a study of the prevalence of chronic psychoses in the population of the state of New York." Anna M. Peterson: "The eugenical aspect of custodial institutions for women." F. Stuart Chapin: "The scientific aspects of field work in the social sciences." C. B. Davenport: "Heredity of twins." H. H. Laughlin: "The Eugenical provision of the constitution of the German republic."

The present active membership of the association, made up of those who have actively pursued or published creditable eugenical studies, is nearly two hundred. It has also recently provided for a body of associate members to be composed of persons who have special knowledge in fields contiguous to eugenics which may be of special service in eugenical research. The president for the ensuing year is Professor Irving Fisher, of Yale University, the Secretary-Treasurer, Dr. H. H. Laughlin, Superintendent of the Eugenics Record Office.

As a part of its work the Executive Committee of the association has drafted and presented to the proper authorities the following resolutions having for their purpose the advancement of eugenical interests:

1. In reference to the necessity of governing immigration on the biological as well as the economic side.

2. Calling on genealogical and historical societies to provide committees on eugenics and to lay special stress upon the pedigree aspect of historical and genealogical research.

3. Calling on the federal government to make provision whereby eugenical interests would be advanced by making the larger inheritance-tax applicable to those with fewer children, and a smaller inheritance-tax to those with a greater number of children.

4. Asking the Congress of the United States to provide for the printing of the names of the heads of families of the second census (1800), as it has already done in the case of the first census (1790).

5. Calling on the federal government to add to the population schedule for the census of 1920 a column providing for "the full name of the father" and another for "the full maiden name of the mother" of each person enumerated.

6. Presenting to the Roosevelt Permanent Memorial Committee and to the Women's Theodore Roosevelt Committee the suggestion that the establishment in Roosevelt's own voting precinct of an institution for studying the factors that govern American family life would be carrying on Roosevelt's ideals.

7. Appointing as committee-of-one Dr. C. B. Davenport, with power to act in the matter of a permanent International Eugenics Institution and an International Eugenics Congress.

8. Calling upon the United States Senate Committee on Education to include in Senator Hoke Smith's bill establishing a Department of Education, due provision for promoting eugenical interests.

9. In reference to State eugenical legislation, calling upon the states to develop a combined State-wide policy of segregation and sterilization as the best means of insuring the non-production of hereditary degenerates.

10. Calling upon the colleges and the universities of the land to provide courses of instruction setting forth the principles which determine race fortunes, and especially the facts of human heredity and their relation to individual talent and national efficiency.

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# Department of Physical Education

# You Know You Should, but You Don't

C. WARD CRAMPTON, M. D.

However true it may be, it is popularly accepted that physicians who know all about health are not any more healthy or longer lived than any other class of folks. Like carpenters, for instance, who know all about remaking and rebuilding buildings and little about the repair and upkeep of the human body. In this instance it is perfectly true, because carpenters on the whole live longer than doctors. This is not because the doctors' knowledge of hygiene in any way shortens their lives but because they work too long, worry too much and get all their exercise by prescribing it for their patients and taking none of it themselves; while the carpenter has an occupation which under the prevailing scale of wages is accompanied with but little worry and he gets his exercise, of a kind at least, in the course of his work.

Whether doctors or carpenters, men and women exhibit the common human failing that they do not do what they ought to do.

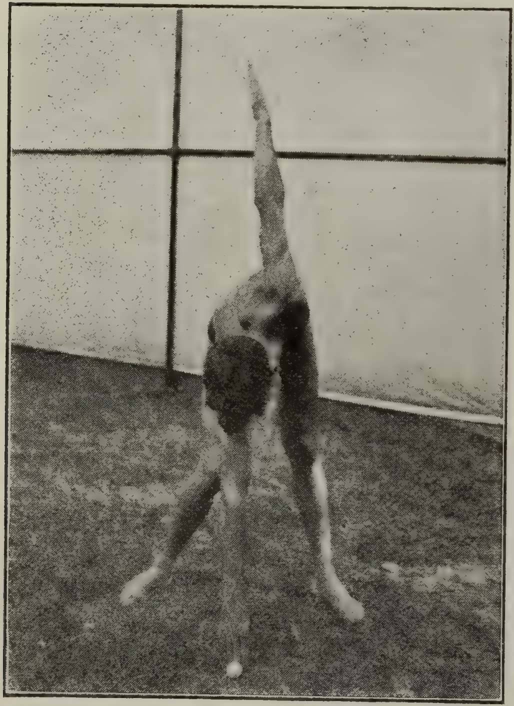
The benefit of a good solid ten-minute exercise in the morning before breakfast, is very well known to hundreds of thousands; the man or woman who religiously and invariably does the regular stint day in, day out, year in, year out, is an exception.

The reason is not far to seek. In the morning it is frequently hard enough to get out of bed without piling on the additional indignity of driving sleepy muscles to work. Besides, when one is feeling perfectly well and healthy the incentive to do things for one's health is purely intellectual. Sickness seems remote and far away. When one is sick or has just recovered, the most important thing in the world is health and everything else sinks into insignificance. "When the Devil was sick, the Devil a monk would be. When the Devil was well, the Devil a monk was he." This bit of piquant antiquity goes to prove that the Devil of the middle ages was conceived to possess human qualities.

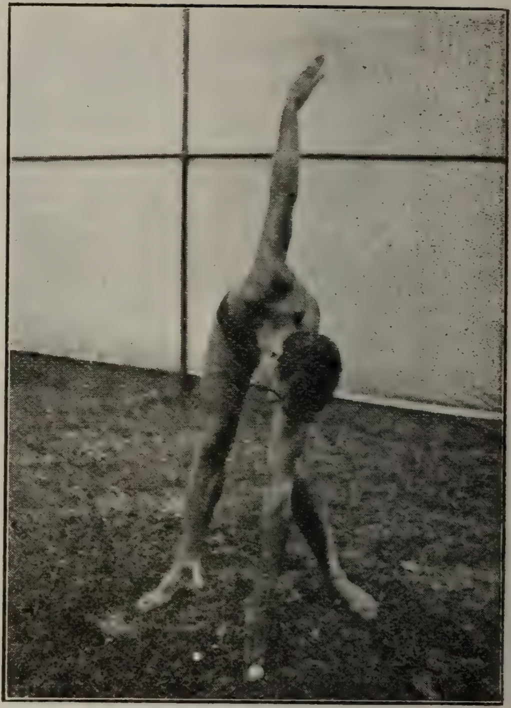
In the middle ages it was firmly established in the minds of everyone that the interesting, happy, joyful things were bad and endangered the salvation of the soul. Goodness was to be purchased only at the expense of bidding farewell to all good times and pleasures of every kind, drawing a long face and setting one's eyes on the far-distant delectable hills. Today we are coming to the conclusion that godliness and happiness go hand in hand, while wholesomeness and holiness mean much the same thing. The biologists, assuming the role of historians of the race, assure us that Nature has placed a happy sign on everything that is good and made pain the signal of danger for things that are bad, and need remedy. This is a comforting doctrine and we are inclined to accept it at its face value, ignoring the few exceptions to the general rule which might be forced upon our attention.

The problem of the morning exercise is not only the problem of the selection of proper movements, but what is far more important, the problem of getting them done. Following the biological cue, we are convinced that if we attach a pleasure, interest or natural motive to the occasion we will get our result. If we rely upon a sense of duty or an application to health in the future, we will almost certainly fail.

Exercises are interesting in proportion to the racially old emotions they arouse. The most vitally arousing things of existence are love and war. These are compelling, for without success in them there is no biological survival. Closely related to them are the motor elements of the survival, running, jumping, swimming, climbing, throwing, hitting and fighting. If one watches the games, pastimes and sports of the human race, he will see that every one of them contains one or more of these elements. Following a logical sequence we arrive at the conclusion that if we take an exercise from a game or put the same interest into the exercise, we become *en rapport with Nature;* in fact, we unlock a flood of natural forces which serve the strongest and most lasting incentives possible. For this reason we use in our schools exercises in a natural form,—dances, athletics, games and play. For morning exercises we can apply the principle to the movement described below.

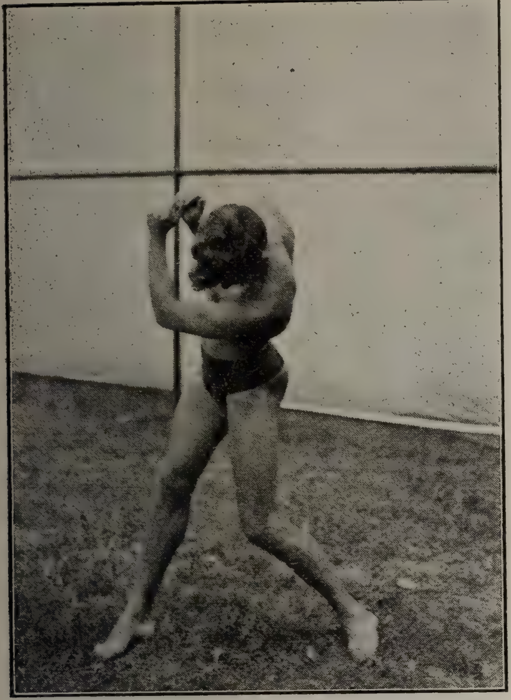


Golf: Movement I. Right Hand Down.



Golf: Movement I. Left Hand Down. Note that the hips have not swerved either to the right or left.

Let us take golf for instance. The man who needs exercise most is the one who has arrived at the stage of golf. This is not to say that golf is a game only for physical derelicts of uncertain age. Quite the reverse, it is a game for every age and stage of human life from eight years to eighty. "Play golf" is the prescription usually handed out by physicians to the

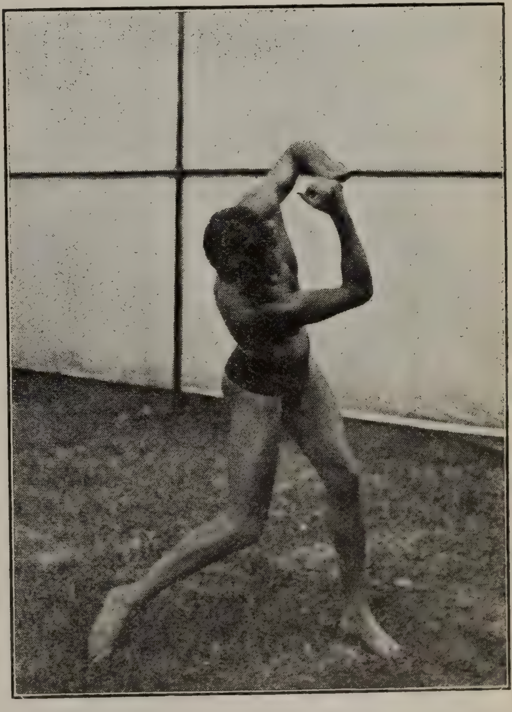


Golf: Movement II. Note the left shoulder pointed directly to the ground.

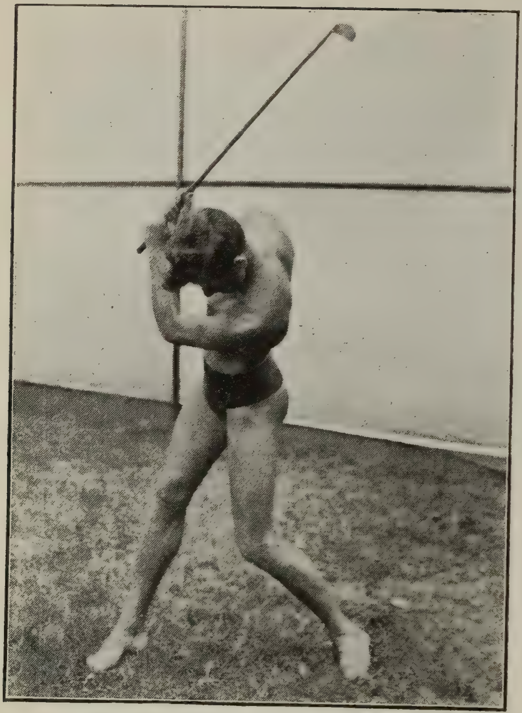
man of fifty who never has played a game of anything but poker and business in his whole life, and survives merely because his ancestors had enough exercise to give him a good constitution. He has coddled himself along, getting his exercise from the masseur, his fresh air from an electric fan and his entertainment under the bright lights instead of the sunlight. If he is wise, he takes the doctor seriously and plays golf. When he first lays his hand on the golf stick it feels like a club, and tingling along the shaft and up his arms comes the dim thrill of a thousand generations of man—fighting and fighting men. He gives it a preliminary waggle, feels like swinging it around his head and with a whoop or two as a feeble echo of thundering or war-cries of his ancestors. At any rate it feels good to him and he wants to hit something with it. This he does; sometimes it is the ball and sometimes it is the turf. However, he hits something, and there is satisfaction in that. Getting interested in the game, he wants to hit the ball at least a majority of times. He tries to make it sing that clear, sweet song which commences with a clear, sharp click and sends it with a faint, half-heard thud many yards away. He is now interested in golf. He buys a book written by an expert, takes lessons, practices strokes and talks his friends out of their chairs, discoursing about wonderful shots and alibis. Yes, he is interested in golf.

He finds the most wonderful thing is to "keep his eye on the ball" and to swing the body so that it will rotate on its axis cleanly and neatly without swaying or swinging around as if he were trying to "side swipe" the ball with an axe. This takes practice, because a new set of co-ordinations is not learned overnight by a nervous system sixty years old.

The way to learn this movement is to



Golf: Movement II. The shoulders have revolved in the arc of 180° with the neck as a center. The head is turned slightly. The eyes are still on the ball.



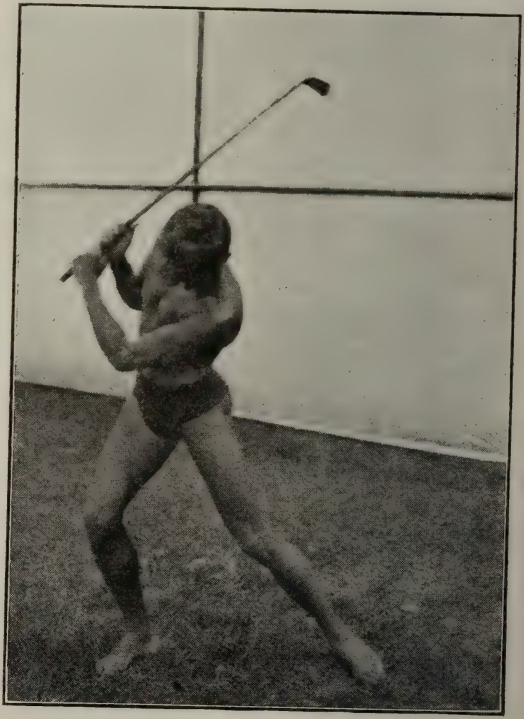
Golf: Movement II with Stick. Back Swing Correctly Done.

practice it in elementary form as one of the trunk movements of the daily morning exercises. Done properly, it stimulates the circulation, squeezes and massages the abdominal contents, vertebræ, muscles of the neck and trunk, particularly the posterior shoulder and neck group, which we have seen are important to good posture, and last but not least, it exercises and massages the joints and ligaments of the spinal column.

### The Golf Twister

*Position.* The feet are placed eighteen inches apart, trunk bent forward, right arm extending forward and downward until the finger tip touches the floor ten inches in front of a line drawn from toe to toe, the left arm extending backward and upward.

*Movement Number 1.* Keeping the knees straight, the head and trunk in exactly the same position, the right arm is swung to the high vertical and the left arm takes its place, with finger tips touching the floor. It is important that the head should not move and the eyes are to be kept glued to a point on the floor which corresponds to the golf ball. An old English golf instructor used to require his students to wear a long red tie which hung from the neck well down toward the turf. As the golfer leaned over it came into the line of vision. His instructions were: "Keep the tie on the ball," instead of "Keep the eye on the ball." If the tie swayed from side to side it was wrong. It should remain immovable vertically in the same plane as the ball. This requires the head to remain immobile, swaying not a tenth of an inch to one side or to the other. The spine down to the pelvis rotates its place without the slightest lateral movement sway. Thus we have the whole body rotating around an axis, the spine. This, according to seventy-five per cent of the golf experts,



Golf: Movement II with Stick. "Swaying of the Back Swing" Incorrect. Compare this with the photograph of the correct swing, noting the vertical line in the background and its relation to the athlete.

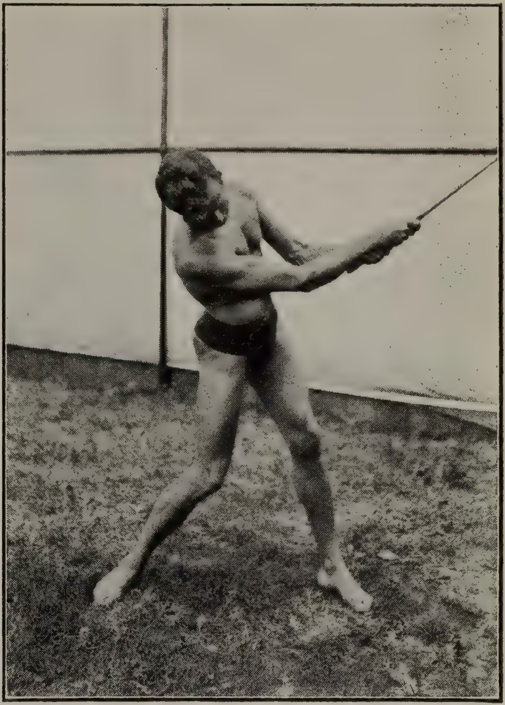
is essential to good golf. The other twenty-five per cent of the golf experts will agree, but they will not admit it, for this is the nature of all experts.

The early morning exerciser may well take the advice of the golf instructor and put on his necktie before the exercises. If he wishes to improve his game in golf, he will keep the tie on the ball and use a real ball for the purpose.

At first the knees should be kept straight. In real golf, however, there is some knee and foot action. To simulate this when the right hand is down, the right knee should be bent. It should be bent forward and inward toward the right elbow and the heel barely raised from the floor. This should be practiced swinging right and left until facility is gained and the head, neck and hips rotate but do not sway.

*Movement Number 2.* In the foregoing movement the trunk is of course inclined too far forward for golf. It should be raised so that the finger tips swing first six inches and then a foot and then two feet from the ground, care being taken that the body rotates and does not sway and that the knee joints point toward the median line at each turn.

Next the hands can be clasped together as if holding a golf stick, or better yet a light stick may be used, if the furnishings of the room permit and the golfer has arrived at the point of really and actually practicing his stroke. This exercise should be used every morning. It is most useful in its simplest form, with the finger tips sweeping the floor; the psychological result is the greatest and the education of the nervous system is most helpful to the golfer.



Golf: Movement II with stick. Away! Eyes still on the place the ball previously occupied.

# Home Hygiene and Economics

## The Invalid's Room

The possible need of a sick-room should be kept in mind when planning a house. This term is really a misnomer; we should call it *a health-room,* because it is here that special efforts are made to bring back the invalid to health. The positive idea of health must be kept in mind. Is it not much more cheering to think of occupying a health-room than a sick-room?

In selecting the location and furnishings for such a room, as much attention is required as for the library or kitchen. If space does not permit setting aside one room for a rest or hospital chamber exclusively, let it serve ordinarily as guest or sewing room. The simplicity of its arrangement will not make it any the less attractive.

### Select a Sunny Room

The room should be so situated as to get the greatest amount of sunlight and fresh air possible. A southwest corner is best, with windows on two sides, where cross currents will keep the air clean. A pleasant view from the windows is always desirable. It should also be in the quietest part of the house. In some cases this will be a front room, in others, one at the rear of the house. It should be where it may be easily heated in cold weather. The bathroom should be conveniently near. An almost essential bathroom fixture is a gas or an electric plate where water and liquid foods may be easily heated.

The health-room should not be too remote from the kitchen, yet not so close as to get the noise and odors from it. The room should contain not less than one thousand cubic feet of air space, that is, 10x10; but if it is twice that size, so much the better. The walls and ceilings should be washable. Paint is good. A soft green tint, or cream, tan and blue are restful colors. Paper is unhygienic, and if used at all, should be plain, as figured walls are very tiresome to a sick person. A few pictures on the walls are desirable and should be well chosen and frequently changed. Children are especially interested in pictures they like. The floor should be of hard wood. Carpets collect and hold the dust, and when soiled, cannot be washed. Small rugs are permitted except in surgical and infectious cases. They should be small enough to be removed from the room for cleaning.

### Use Washable Furnishings

The furniture in the room will depend somewhat upon the needs of the occupant, which will vary in different cases of illness. At all events, a bed, bedside table, dressing case, screen, and a couple of chairs are needed. The furniture should be simple and light, without upholstering. White enamel is best, because it looks neat and is easily cleansed. Curtains and draperies should be of light washable material.

Plants are the best ornaments for an invalid's room, especially if the patient is able to watch their growth. A few flowers are usually pleasing, and really have a beneficial effect because of their beauty, if they do not possess a heavy odor.

For the convenience of the nurse, the bed should be placed with both sides free from the wall, with the light falling across the bed, and not directly in the patient's eyes. Care should be taken to avoid drafts and to allow the patient to get the outdoor view. The dresser should be so placed that the mirror will not reflect light in the patient's face, and so he cannot see himself in the glass. Place the bedside table near the head of the bed at the left, to enable the patient to have the free use of the right arm in reaching it.

The furniture in the room should be arranged to give a good appearance, yet convenience for the nurse is the first consideration. If supplies must be kept in the room, they may be placed in a closet or behind a screen; a cupboard may be improvised out of a box.

### Keep Everything Clean

Absolute cleanliness is of the utmost importance in the health-room, because of the increase of waste products, the patient's greater susceptibility, and his lowered resistance. In fact, cleanliness, fresh air and sunshine are three of Nature's greatest remedies and must be provided in abundance. Unless great care is exercised in disposing of waste material of all kinds, the air will become contaminated. Dust and dirt afford a good breeding place for germs, and must not be tolerated. Soiled linen and soiled crockery must be immediately removed from the room and plunged in boiling water. The floor must be brushed daily with a dustless mop or covered broom. Soft cloths which do not shed lint are best for dusting the furniture. The duster may be slightly dampened for paint, but it is better to use an oiled cloth for varnished or polished surfaces. In dusting, remember that the object is to remove the dust from the room, and not merely to change its location in the room. Dust everything, including chair rounds, door panels, chandeliers and light bulbs, window sills and sashes, bedsteads, tops of base boards, etc.

Change dresser scarfs and table covers as often as necessary to keep them spotless; with care, they should not require changing more than twice a week.

Potted plants should have dead leaves removed from them, and be thoroughly watered at least once a day. Cut flowers should have the stems clipped daily and be placed in fresh water containing a little salt. Remove all plants and flowers as soon as they are faded, for they are unpleasant to see.

Unless the patient is seriously ill, it will interest him to watch the room being freshened and made attractive in this way for his comfort.

If it is necessary to heat the invalid's room with a stove, a screen may be placed between the bed and the stove. Coal should be brought into the room in small paper sacks. Have as much coal put in each sack as is needed for one replenishing of the fire. It may then be placed within the stove without noise when the patient is sleeping.

When the case is an infectious one, it may be necessary to keep solutions of chloride of lime in bowls or shallow dishes under the bed or in any inconspicuous place.

The mops and dusters used in the patient's room must not be used in other parts of the house. The dry mop should be hung outside in the fresh air when not in use, and all dusters should be rinsed in hot water and dried in the sun.

### Flush the Room with Air

The ventilation of the room needs special attention in cold weather. In order to avoid drafts, direct the air current upward. This may be accomplished by placing a board five or six inches wide beneath the lower sash of the window so that the air will enter in the middle of the window between the sashes. When no board is at hand, pillows or a rolled blanket may be used. If the screen is needed in another part of the room, one for the window may be improvised with blankets and high-backed chairs.

Flushing the room with air several times daily is important, especially if it happens to contain only one window. Put extra covers on the patient and open the windows wide for a few minutes. The temperature of the room should be kept as uniform as possible. From 68° to 70° F. is a good temperature for the day time. It may be lower at night. A thermometer should be used to test the temperature. It must not be hung near windows, radiators, registers or lights.

Patients should have an abundance of sunlight; it not only has a beneficial effect upon the patient physically and mentally, but also a definitely destructive effect on germs. Electric light has a very similar effect, and is the best artificial light, both for this reason and because it does not injure the air by using the oxygen and giving off waste products. When gas or oil are used for lighting purposes, extra provision should be made for ventilation.

### Silence Is Restful

It is very important that the room should be quiet, especially if the patient is very weak or nervous, or both. In order to secure quiet, however, it is not necessary to whisper or walk on tiptoes. Both of these practices are usually annoying to the patient. Look after creaking doors, rattling windows, etc. A bit of folded paper or a thin piece of wood will keep the windows from rattling and a few drops of oil or a little vaseline on door hinges will stop the squeaks.

Whoever is caring for the patient should have a regular time for doing the room work and making the patient tidy for the day with bath and whatever regular treatments the doctor orders. Be systematic in the work and it will be accomplished with less expenditure of energy and less discomfort to the patient. Follow a definite plan, but do not be too rigid. The patient's welfare and comfort are the first considerations.

### Sanitary Bedding

Just a word about the most suitable bed. We have already suggested white enameled iron, and it should be several inches higher than the ordinary bed, on easily rolling casters. Such a bed is light to move and easy to clean and disinfect. A low bedstead may be raised by removing the casters and placing the legs on wooden blocks, which may be quite wide at the bottom in order that the bed may stand firm. The bed-springs should be of woven wire with coiled springs, so that it will not sag. Box springs are unsanitary. Horsehair makes the best mattress for general use because it is light in weight and nonabsorbent. Such a mattress is, however, very expensive. Cotton felt is a good substitute and costs less. A straw or excelsior combined with cotton is good in contagious cases, as the contents can be burned and the tick boiled. Feather beds absorb readily and are altogether unsuitable. Pillows made of hair, feathers, down or cotton may be used, as the patient prefers. All-wool blankets make the best covers, as they have the advantage of being light in proportion to their warmth. In covering a patient, the aim should be to have the greatest warmth with the least weight, and the material should be porous. Sheets are usually of cotton, and should be large enough to tuck in well all around. Linen is cooler than cotton and is desirable in hot weather and when the patient is feverish, though of course linen sheets are much more expensive.

Rubber or white table oilcloth may be used as a draw-sheet to protect the mattress, and over that a suitable bed-pad. All the bed linen to be used in case of sickness may be kept in a drawer in the closet of the room, and an emergency medicine cabinet on the wall or on a shelf in the closet is indispensable. It is well to provide for a good-sized closet in the room where the sick are to be cared for. There is nothing like having everything ready beforehand. It simplifies things for the patient, the nurse and the doctor. It is especially essential to have everything ready and compactly arranged when some member of the family acts as nurse, besides attending to other duties. The more conveniences at hand, the more the nurse's strength and steps are saved.

# October Recipes

MRS. HARRIET NEWTON

### Stuffed Onions

Select the largest white onions you can find. Cut the tops of the onions and remove some of the inside with a small, sharp knife, leaving a cup. Take some bread crumbs and brown in butter. Fill the onions, and bake in a deep dish, basting with water and melted butter.

### Stuffed Tomatoes

Take six large, ripe tomatoes, cut top off and scrape out all the soft part. Mix with bread crumbs, add onion, corn, parsley, butter and salt. Chop all very fine. Fill tomato cups, put in a deep pan and bake in a moderate oven. Baste with water and butter.

### Nut Sandwiches

Chop fine some almonds, English walnuts, and hickory nuts. Mix two parts almonds with one each of the others. Sprinkle on a well-buttered slice of bread. Add a little good cheese chopped or grated and cover with another slice of well-buttered bread.

### Eggless Oatmeal Cookies

1 cup sugar
1 cup chopped raisins
1 cup oatmeal
1 tsp. cinnamon
1 tsp. soda
1 cup sweet milk
2 cups flour
½ cup chopped nuts
½tsp. nutmeg.
1 tbsp. butter

Mix well butter and sugar, add milk and flour, soda, cinnamon, nutmeg, oatmeal, raisins, and nuts. Beat all together well and bake in small gem tins in a moderate oven.

### Carrot Pudding

2 cups grated carrots
¼ lb. currants
4 tbsp. sugar
6 oz. butter
¼ lb. raisins
4 tbsp. flour

Mix all together and spice to suit the taste. Steam 3 hours and brown in oven 20 minutes. Serve with hard sauce.

### Cornmeal Cake

¼ cup sugar
1 tbsp. butter
1¼ cups sweet milk
1 cup flour
1 egg
1 pinch salt
2 tsp. baking powler
1 cup cornmeal

Mix butter and sugar and beat in egg. Sift cornmeal, flour and baking powder together, add salt. Mix all together real thin and pour in a flat pan. Bake in a moderate oven.

### Cream Tapioca and Cocoanut

3 tbsp. tapioca
1 qt. milk
4 eggs
1 cup sugar
3 tbsp. cocoanut

Soak 3 tablespoons tapioca three hours in cold water. Pour off the water and stir into the boiling milk. Boil 10 minutes, stir in yolk of eggs, one cup sugar and chopped cocoanut, boil 5 minutes longer. Pour into pudding dish. Beat whites of eggs, add little sugar, and put over top. Sift cocoanut on top of whites and brown in hot oven. Serve cold.

### Sweet Corn

This vegetable is often spoiled by overcooking. The skin toughens if allowed to dry while hot. Remove the outer husks and leave the inner husk on. Cook 15 minutes in boiling salted water.

### Coffee Cake

1 pt. milk
1 egg
1 tbsp. sugar
1 cup yeast sponge
1 pinch salt
Flour

One cup yeast sponge, one pint warm milk; make a batter, add a cup of flour, beat well. Let rise in a warm place. Add more flour, so you can spread it in flat, buttered pans, and let rise. Sprinkle with butter, sugar and cinnamon. When light, bake in a moderate oven.

### Sweet Potato Biscuit

1 large sweet potato
1 tbsp. butter
2 eggs
¼ oz. compressed yeast
Flour

Boil potato until done, mash while hot. Work in 2 eggs, ¼ oz. yeast and enough flour to make a dough; let it rise overnight in a warm place. In the morning work in the butter and mould into small biscuits. Let rise until twice their size and bake in a hot oven.

# Requested Recipes

FERN FERGUS

### Muffins

2 cups flour
4 tablespoons baking powder
½ teaspoon salt
2 teaspoons sugar
1 egg
1¼ cups milk
2 tablespoons butter
Salt

Sift together the flour, salt, baking powder and sugar. Beat the egg until light, add milk and stir into the dry ingredients. Add the melted butter and salt. Beat thoroughly and bake in well-oiled muffin pans in a moderately hot oven.

### Cream of Peas Soup

½ can peas
1 teaspoon sugar
½ teaspoon salt
1 cup cold water
1 slice onion
1 tablespoon butter
1 tablespoon flour
1 cup hot milk

To the peas add sugar, salt, cold water and onion and simmer 20 minutes, then run through a purée sieve. Melt the butter, to it add flour and rub to a smooth paste, then gradually add the hot milk and blend smoothly. Cook until the mixture is done and add peas. Heat thoroughly and serve.

### Drawn Butter Sauce

1 cup butter
1 tablespoon flour
2 cups boiling water
Salt

Add the butter to the flour and beat to a cream. Pour on the hot water, stirring constantly but do not quite boil (as boiling makes it oily). For variety, add chopped parsley or mint with two hard-boiled eggs, chopped.

### Scalloped Eggs

12 hard-boiled eggs
1 cup cream
¼ cup butter
2 tablespoons flour
2 cups bread crumbs
Chopped parsley

Melt the butter, add flour and stir. Add cream slowly, parsley and salt. Cook until thick. Slice eggs and place in baking dish alternating with layers of bread crumbs, over all pour the cream sauce. Sprinkle with buttered bread crumbs and bake until brown.

### Cocoa

3 cups milk
5 tablespoons cocoa
4 tablespoons sugar
1 teaspoon cornstarch
⅛ teaspoon salt
½ teaspoon vanilla
1 cup boiling water

Mix the cocoa, sugar, cornstarch and salt and stir in gradually 1 cup boiling water. Boil 5 minutes. Add to heated milk and beat several minutes with a whisk or egg beater. Add vanilla just before serving. Whipped cream may be added if desired.

### Chocolate Sauce

½ cup sugar
1 tablespoon cornstarch
¼ cup grated chocolate
½ teaspoon butter
1 cup boiling water
1 tablespoon butter
1 teaspoon vanilla

Mix the sugar, cornstarch and grated chocolate together and gradually add the boiling water, stirring all the time. Boil 5 minutes; remove from fire and add butter, salt and vanilla.

# Oxygen as a Remedy

Oxygen is essential to life. It supports the vital combustions of the body just as it supports the combustion of wood, oil, and other fuel in our stoves and furnaces. The ordinary air contains a little more than one-fifth (21 per cent) its volume of oxygen. This amount is more than is needed in ordinary respiration, which requires only about 14 per cent of oxygen; but during violent exercise a considerably increased consumption of oxygen occurs, and in elevated altitudes in which the air is rarefied, the amount of oxygen is diminished. The extra six per cent of oxygen which the air contains is evidently a factor of safety to provide for these emergencies.

The body may suffer through receiving too little oxygen in several ways:

1. By an insufficient amount of oxygen in the air, as when it contains a large amount of carbon dioxid, which occasionally happens in connection with certain industries, as in the burning of lime.
2. A deficient intake of air, as when the chest is confined or the air-passages obstructed.
3. Slowing of the circulation of the blood, so that the carbon dioxid of the blood is not thrown off and the oxygen taken in with sufficient rapidity.
4. A deficient amount of hemoglobin in the blood, as when the red cells are diminished in number, as in anemia.
5. When the hemoglobin of the blood, which carries oxygen, is damaged, as in carbonous oxid poisoning, so that it does not give up its oxygen readily.

While oxygen is carried by the red cells, it is passed to the tissues by the plasma or watery portion of the blood. The plasma absorbs the oxygen from the red cells and passes it on to the tissues. The amount of oxygen contained in the plasma is usually small, only about one-fortieth that found in the red cells, but it may be increased by breathing pure oxygen to as much as seven times the usual amount. In this way the plasma may in emergency be made to take the place of the blood cells. For example, a frog from which all the blood is removed, being substituted by a saline solution, lives and breathes in a perfectly normal way in an atmosphere of pure oxygen.

When the supply of oxygen is greatly diminished, giving rise to cyanosis, relief should be obtained as quickly as possible by supplying oxygen. A delay may result in so great an injury to the nervous system that later efforts may fail, when more prompt action would have been successful.

In cases in which the red cells are deficient and so not able to serve the purpose of a reservoir to keep the oxygen content of the plasma up to the full amount, the plasma may be made to absorb and carry an extra quantity by giving air charged with an extra amount of oxygen.

It should also be remembered that rapid breathing does not necessarily mean an increased supply of air to the lungs. Very rapid breathing is likely to be shallow breathing. The deeper parts of the lungs are not emptied. If the patient is not able to breathe deeply he should be assisted by artificial respiration or by rhythmic compression of the lower part of the chest or pressing up against the diaphragm from below during expiration. A peculiar form of respiration, known as Cheyne-Stokes breathing, indicates failure of the respiratory center and the necessity for giving inhalations of oxygen.

The inhalation of oxygen is always indicated when there is cyanosis or rapid breathing. This condition may exist as the result of extreme anemia. Rapid respiration is sometimes noted in cases of diabetes. In all such cases oxygen may be inhaled by means of a stream of oxygen passed into one nostril through a soft rubber tube, a mask being placed over the nose and mouth of the patient, or better, by means of a respiratory chamber.

In the *British Medical Journal* for March 6, 1920, Meakins shows that in normal individuals the blood contains about nineteen-twentieths as much oxygen as it is capable of holding; in other words, it lacks five per cent of being completely saturated. In pneumonia and conditions of cyanosis the under-saturation may amount to as much as 18 per cent. By causing the patient to breathe pure oyxgen, the under-saturation, even in pneumonia, may be reduced to three per cent; in other words, the blood of such a patient may be made to hold and carry even more oxygen than it usually carries in health.

It has been recently shown beyond any chance of doubt that oxygen is a real life saver in severe cases of pneumonia, and should always be resorted to in such cases. Oxygen may now be obtained in any quantity desired and on short notice, as it is widely used in connection with nitrous oxide gas infusion.

The inhalation of air supercharged with oxygen is a remedy of great value in cases of serious heart disease in which blueness of the lips, shortness of breath and other symptoms indicate deficient oxygenation of the blood. Such patients may often be made perfectly comfortable by being put to sleep in an atmosphere containing twice the normal amount of oxygen. This may be arranged by placing the patient in an air-tight chamber to which is furnished an extra, measured supply of oxygen, the products of respiration being removed by circulation of the air through a purifying apparatus.

Oxygen treatment by this method is now being employed in several of the leading hospitals of Great Britain, especially in the cases of soldiers who have been gassed.

# How Vitamines are Destroyed

Vitamines are destroyed by the action of heat or alkali and by so-called "high milling" of cereals.

A boiling temperature impairs vitamines, but does not necessarily destroy them altogether. At least, this is true of the fat-soluble and antineuritic vitamines.

The antiscorbutic vitamines are destroyed by boiling and are damaged by a temperature of 160 degrees, the usual temperature employed in pasteurizing milk.

Canned meats and vegetables are heated to a temperature of 240 degrees for two or three hours. This is necessary to destroy the spores of putrefactive germs which are not killed by ordinary cooking temperature. It is thus evident that canned foods are deficient in vitamines.

Funk found that a dog fed exclusively on canned beef died in two weeks.

Canned foods should never constitute a large part of the dietary. Fresh foods, rich in vitamines, are needed daily to maintain the nerve tissues in health.

Vitamines are destroyed by alkalies. For this reason, the use of carbonate of soda in cooking is to be strongly condemned. When bicarbonate of soda is used in the making of bread, it is by the process of baking converted into carbonate of soda, which is strongly alkali and destroys vitamines. The old-fashioned method of making biscuit by the use of soda and sour milk is therefore objectionable. It is true that if a sufficient amount of acid is present to neutralize the soda completely, its injurious effects might be counterbalanced; but this is rarely the case, for soda and sour-milk biscuit usually have a strongly alkaline flavor.

Baking-powder biscuit, as ordinarily made, have an alkaline reaction effect, which affords sufficient evidence that the vitamines are damaged or destroyed.

Pellagra prevails most extensively in certain districts in the South where the new-process cornmeal is generally used. This preparation of corn is almost wholly deprived of vitamines by the process of milling, and when prepared with baking soda, what small proportion of vitamines remains is destroyed by the alkaline soda.

In mountainous regions contiguous to the localities where pellagra is very prevalent, the disease is either absent or only rarely encountered. These mountaineers are so far away from the cities where new-process cornmeal is obtainable that they are obliged to have their corn ground in the small mills scattered through the mountains, in which the old-fashioned stone burrs are still in use. The cornmeal made in this way represents the entire grain and is comparatively rich in vitamines.

Experiments made by Voegtlin and other investigators, reported by the United States Public Health Bureau, gave the following results, which indicate very clearly the effects of a deficiency of vitamines in producing diseased conditions of the nervous system.

In animals fed on fine-flour bread, cholera and neuritis appeared in fowls at the end of twenty to thirty days.

Fowls fed on whole wheat remained in good health.

Fowls fed on corn grits or new-process cornmeal showed neuritis in three to seven weeks.

Fowls fed on old-fashioned water-ground cornmeal, or the whole corn, remained well.

# Skimmed Milk

Skimmed milk, especially separated milk, has not only been deprived of its fat but also of one of its most precious constituents and special forms of fat. Butter fat as present in milk is in a state of fine emulsion, a condition which greatly aids its digestion and assimilation. Further, butter contains a very precious vitamine, the so-called fat-soluble A, or antirachitic (anti-rickets) vitamine.

The suggestion of some writers that skimmed milk may be used in place of full milk as a measure of economy, provided that margarine or some other form of fat is employed in quantity equal to the butter fat which has been removed, is bad advice. Skimmed milk has a considerable nutritive value, but it lacks the growth-promoting power of full fresh milk, and on this account cannot take its place. When skimmed milk is used, it should not be used as a substitute for full milk, but as an addition to the regular daily supply of full milk which every child should have. It may also be used as an added source of lime salts. It may be employed in cooking, as in the preparation of bread, puddings, etc. Skimmed milk may be used without detriment in connection with a liberal supply of butter.

## Diet to Prevent Tapeworm

There is no dietetic treatment by which the tapeworm may be expelled from the alimentary canal. Suitable vermifuge treatment is necessary. It is, however, important to impress upon the patient the fact that this disease can be contracted in no other way than by the use of flesh foods, either beef, pork or fish.

The fish tapeworm produces more serious injury to health than does either the beef or pork tapeworm, often giving rise to a very pernicious anemia.

It is very important that the patient should eat very sparingly for several days before the treatment for tapeworm is undertaken; and to prevent a recurrence of the disease it is equally important that flesh foods, or at least those which harbor the parasite, should be entirely discarded. It is true that thorough cooking destroys the embryo of the parasite, but one can never be certain that the meat eaten has been so thoroughly cooked as to destroy every one of them.

## New Source of Food Poisoning

An outbreak of food poisoning which occurred at Brighton, England, was found to be due to infected fish. The infecting organism was found to be one not heretofore observed, but belonging to the class of bacteria which give rise to putrefaction.

## Amount of Vitamines Needed

Cooper has shown that the amount of antineuritic vitamine required depends to some extent upon the amount of carbohydrate taken. In the feeding of pigeons, if the amount of starch in the food is increased, the amount of vitamines must also be increased. It is important to bear this fact in mind in the management of bottle-fed infants. When the amount of malt sugar, barley, oatmeal, or other cereal is increased, the amount of orange juice or tomato juice must also be increased.

## The Effect of Drying Greens

Recent observations by Osborne and Wakeham show that little change results from the drying of spinach and other green leaves at low temperatures. The proteins of the dried leaf are slightly more soluble than those of the fresh leaf, from which it appears that drying may be found an excellent means of preserving such green stuffs as spinach, dock and other green stuffs which possess a high value as foods, an important fact recently determined by animal-feeding experiments.

The Chinese, notwithstanding their meager diet of rice and beans, have maintained a high standard of physical development during thousands of years, doubtless due to their extensive use of greens. The average Chinaman uses four times as much greens as the average American.

## Vaccination Against Whooping Cough

Luzzati, of Rome, describes a method of vaccination of children against whooping cough, which seems to be a complete protection against the disease, but the application of the remedy to those already suffering from the disease does not appear to have any effect upon its course.

## Dr. Taylor Recommends a Vegetarian Diet

Dr. Alonzo Taylor, Professor of Physiological Chemistry in the University of Pennsylvania, in his work entitled "The Chemistry of Digestion and Metabolism," says:

"A proper vegetarian diet is in every way a normal and competent diet. Plant proteins contain the same amino-acids as animal protein, and all are there present in abundance. It is quite immaterial to the body whether it forms its two stock proteins from amino-acids derived from plant protein or from animal protein."

## Agar-Agar

Agar-agar is prepared from a seaweed which grows off the coasts of Japan and Ceylon. It is called, also, Japanese isinglass and Ceylon moss. It contains a soluble form of cellulose known as hemicellulose. This agar is obtained by steeping the seaweed in large iron pots. The concentrated liquor is poured off and manipulated in such a way that when culled and dried, the agar appears in long, flexible strings. These are allowed to dry and bleach in the sun upon the sands of the seashore for several weeks, then done in bales. The larger part of the annual crop is consumed in Japan and China as food. The small portion sent to this country is chiefly used as a remedy for constipation or intestinal stasis.

## Aerophagia—Air Swallowing

This condition is allied to hiccough, in which air is drawn into the stomach in considerable quantities, the diaphragm being contracted, as in inspiration. While the epiglottis is closed, air is sucked into the stomach instead of into the lungs. Its causes are similar to those which provoke hiccough. The patient should resist the tendency to draw air into the stomach by taking ten deep breaths while holding the mouth widely open. It is well also to drink two or three glasses of hot water.

The food should be moderate in quantity and rather dry, and should be thoroughly chewed. All causes of gastric irritation should be avoided, especially the use of condiments, tea, coffee, or very hot foods or drinks. Special attention should be given to thorough mastication.

## Limes Inferior to Lemons in Preventing Scurvy

A research conducted in London, reported in the *London Lancet,* in which guinea pigs and monkeys were the subjects, shows that the juice of fresh lemons is four times as valuable as a means of preventing scurvy as is the juice of fresh limes. Preserved lime juice was found to be entirely useless. It was shown from a historical study that "at the period when scurvy was eliminated from the British navy by 'lime juice' the term was used for the juice of lemons, and that it was not until the second half of the nineteenth century, when the juice of West Indian limes was adopted in the navy and mercantile marine that the disease again made its appearance"

## Too Much Protein

A recent dietary survey made by the U. S. Department of Agriculture, in which a record was made of two thousand different families and institutions, showed the average intake of protein to be 96 grams, or nearly three and one-half ounces, at least one-third more than the amount required by the body according to the protein standard established by Professor Chittenden of Yale University.

## Electrical Purification of Milk

According to the *British Medical Journal,* the Medical Research Council of England has recently perfected a method of sterilizing milk by passing through it alternating currents of electricity, the milk being kept meanwhile at a temperature of 144° to 150°. At these low temperatures the injurious effects resulting from the sterilization of the milk at higher temperatures are not produced. After electrolization the milk is rapidly cooled. Its taste is not changed, and treated in this method it can be kept until the fourth day without souring. While all bacteria are not destroyed, the number is reduced to 99.9 per cent, or one in one thousand. The colon and the tubercle bacilli were found to be uniformly killed by this electrical treatment.

If on further study of this method it is found that the vitamines are not destroyed and no other injurious effect produced upon the milk, its general introduction may become the means of greatly reducing the death-rate among infants and children.

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## EDITORIAL DEPARTMENT

# The Tyranny of Senility

In the primitive days of the race, youth was long and age was short. The old prophet gave an inkling of this when he compared the life of man to the life of a tree. In these days, the old order is reversed; youth is short, and age is long. Second childhood follows childhood almost without any interval of vigorous maturity. The race itself is becoming senile. The stamp of senility is everywhere. The heavy hand of decay rests upon every department of human life. Every prophet of a new truth is mocked, not by the children as was Elisha of old, but by the fathers and mothers whose eyes are so dimmed that they cannot see clearly, and whose ears are so dulled that they cannot hear distinctly, and whose judgments are so perverted by the degeneracy of age that they cannot discern truth.

Boys smoke because their fathers smoke, and laugh at anti-tobacco agitators. It is no trouble to convince boys of the evil of smoking, and it would be easy to suppress this vice were it not that the old smokers refuse to be reformed. It is the old sinners who support the liquor and tobacco habits. It is a great mass of senile thinkers who cling to old death-dealing habits that hinders the march of progress and fosters race degeneracy and decay.

The only hope of the world is in the youth of the race, whose minds are not yet altogether surrendered to error or bound irredeemably by the fetters of vicious habits. Youthful ideals and aspirations, youthful love of truth and willingness to obey her mandates, are the only hope for the regeneration of the race. For the old, it must be said as of the ancient Hebrew, "Ephraim is joined to idols; let him alone."

# Mind Fatigue

The physiologists long ago demonstrated that fatigue is a state of intoxication. It is known that muscle work produces poisons which dull the senses, lower efficiency, and finally compel cessation of activity when the amount of fatigue toxins accumulated in the blood and tissue fluids is sufficient. A question which has been much discussed among physiologists is whether the brain, as well as the muscles, produces fatigue poisons, or rather, whether mental fatigue, so-called, is due to toxins or to some other cause.

Professor Stiles, writing on this subject in the *American Journal of Public Health,* tells us that "cerebral processes involve but very small masses of protoplasm, and they are doubtless conducted with extreme economy. Is there a condition which can be accurately described as 'mental fatigue'? We usually assume that it is a possibility. If, however, we analyze our own experiences, we have to admit the steady performance of some monotonous mental operation is the tendency to seek relief in novelty— to admit new and irrelevant ideas. Unless the trial is carefully regulated [illegible] will be elements of eye-strain or postural discomfort which are neuro-muscular rather than mental in nature. To be sure, we eventually need to sleep, but frequently the drowsiness comes sooner to the indolent than to the diligently working brain. Some of our ablest experimenters doubt whether we can surely demonstrate mental fatigue.

"Analogies in this field are decidedly clumsy, but the suggestion may be ventured that the multiple equipment of the cortex is at least remotely comparable to a typewriter in which each key is necessarily idle when another has its turn. . . . If this is true, it may well nullify fatigue in gray matter where the rate of disintegration appears to be low."

Mental and nerve depression may be due to overwork of some of the glands of internal secretion, including the thyroid gland. This is especially likely to occur when the mental activity is accompanied by mental excitement, it being well known that the glands of internal secretion are greatly influenced by emotion.

Through the connection of nerve-cells one with another, an infinite number of different conductions or contacts may be made. It is through these contacts, synapses, that nerve paths are formed, over which mental and nervous impulses travel. By repetition the facility with which contacts are formed is increased until finally the formation of a definite path becomes almost automatic, when it is said to be canalized. It is through this canalization of nerve paths that habits are formed and skill or expertness acquired. It is this canalization that enables one to walk without conscious effort, to write without thinking out the forms of each individual letter, to speak fluently, to play the piano, to dance, and to perform athletic feats.

"This same principle of canalization applies to mental activities and habits as well as to those of a lower order. Canalization is likewise the foundation of the characteristics which constitute literary culture or scholarship.

"Canalization of the central nervous system is rendered possible by the power of control or inhibition which canalizes higher orders of animal life. The simple forms of life do not need inhibition. Their requirements are so few, and their adaptation to their environment so complete, that a few canalizations or automatic reactions which they inherit, suffice to meet all their needs; but higher organisms, and especially human beings, on account of the complex life which they lead, are provided with a power of inhibition or control which enables them to form new canalizations to meet changing requirements."

The expenditure of energy required to send impulses along well-established nerve paths is so small that it can hardly be measured; and this fact leads to the doubt whether mental activity produces fatigue. Professor Stiles tells us that a person suffering from mental or nervous fatigue is laboring under two difficulties:

"One is the want of inhibitory control. This is exhibited in the familiar unrest, and, on the afferent side, as hypersensitiveness. The second feature of the trouble is canalization. The 'tired' nervous system has formed bad habits. These are discovered not only in conduct but in unhappy trains of thought, incessant anxiety, and self-pity. Important as it may be in such cases to build up the general health, we can see that the critical need is discipline. Change of scene and sanatorium life may be chiefly useful, as they favor the disruption of the nerve-paths so excessively employed. Psychotherapy may effect this. . . The more insight one gains into the workings of the nervous apparatus the less one is surprised by the comparatively rapid readjustments which may often be accomplished in it."

This condition, known as nervous exhaustion, neurasthenia, or chronic fatigue, is a state of mental and nervous inefficiency which appears to be due, in part at least, to perverse canalization or bad mental and nervous habits, the result of the formation of undesirable nerve paths or canalizations which result in unpleasant trains of thought, dwelling upon imaginary troubles, constant worry, irritability, introspection and a morbid craving for sympathy, as Professor Stiles suggests.

It seems very certain to the writer that in addition to the psychologic cause of nerve exhaustion pointed out by Professor Stiles, another highly important determining cause is to be found in ptomaines, toxins, and other noxious substances, the result of putrefaction processes which take place in the colon when the body wastes are retained through constipation, a condition which is nearly always found present in cases of chronic neurasthenia and nervous exhaustion.

Recent studies of the physiology of the brain and nerves seem to furnish ground for the belief that the condition recognized as mental fatigue is not due to toxins, as in the case of muscle fatigue, and is not necessarily an indication for the necessity of rest, but rather change, so that the thought may travel in different paths. The truth of this view is suggested by the loss of concentration after long mental application, and a disposition to mind wandering.

# An Argument Which Does Not Convince

An English author of a work on dietetics, in discussing the question of vegetarianism, makes an argument so patently lacking in consistency and force that we present it for the entertainment of our readers. Says this author: "Vegetarians contend that their diet tends to health and longevity. First of all, it must be stated that the vegetarian is quite as liable to contract disease through his food or to suffer food-poisoning as the flesh-eater. The vegetarian urges that meat causes diseases of the liver, gout, stone, gravel, chronic rheumatism, skin diseases, disturbances of the vascular system, arterio-sclerosis, kidney disease, migraine, and kindred ailments; that ptomaine-poisoning may follow the consumption of meat; that the animal consumed may be the subject of anthrax, pneumonia, tuberculosis, glanders, various worms, and other diseases communicable to man; that oysters and other shellfish disseminate typhoid fever and so on. But unfortunately quite as many examples can be produced against vegetarian diet. An excess of bread or other starchy food from the vegetable kingdom produces indigestion, flatulence, acidity, congestion of the liver, hemorrhoids, and promotes obesity. Sugar has an enormous value as an energy-provider, but an excess of it will produce evils similar to those following an excess of starch; and it especially causes catarrh of the stomach, attended by an abundant secretion of mucus, which envelops particles of the food, and prevents the digestive secretions from getting to and acting upon them, thereby causing indigestion and ultimately increasing the catarrh and the symptoms attending it. The ingestion of hard fruit, nuts, and fibrous vegetables is a frequent cause of indigestion.

"The communicability of disease is by no means confined to flesh foods. The advice of medical practitioners in the tropics is, 'Eat no uncooked vegetables, nor any raw fruit, unless you can pare it or peel it.' Enteric fever, dysentery, cholera, diarrhea, and various other diseases have often been traced to a disregard of such advice. Even in northerly and temperate climates the consumption of raw, unripe, or over-ripe fruit, is a frequent cause of diarrhea, choleraic diarrhea, and has been blamed for the occasional occurrence of tropical diseases in a temperate climate. Neither are vegetables free from blame. That terrible disease, hydatids, is due to the *Taenia echinoccus,* a minute tapeworm which is taken into the body in the form of ova or partially developed *Taenia* or uncooked vegetables, such as watercress, celery, lettuce, etc. Actinomycosis is due to the ray fungus which enters the organism with green vegetables, such as watercress, celery, lettuce, etc. Ergotism, due to the fungus *Oidium abortifaciens,* is a disease which commonly affects the consumers of rye-bread. Pellagra has been associated with the consumption of maize, and beri-beri with rice. In fact, the superior freedom of the vegetarian diet from disease-giving properties vanishes entirely when the subject is carefully considered."

Certainly our author makes a very poor showing when he presents us as above with a category of disorders which arise from vegetable foods. It is hardly fair to present such ordinary symptoms as indigestion, flatulence, acidity, and obesity as an offset against the long category of diseases previously mentioned as attributable to meat-eating. This is especially true when it is remembered that flesh-eaters are not more subject to the digestive disorders named than are non-flesh-eaters; in other words, that indigestion, flatulence, acidity, etc., are not confined to eaters of starch and vegetable foods, but are more common among meat-eaters. The charge against sugar is well-deserved, but it is true only when *cane* sugar is used and in inordinate quantities, an evil practice which is quite as common among meat-eaters as among meat-abstainers. Again, indigestion resulting from imperfect mastication of hard fruits, nuts., etc., is not a disorder confined to vegetable feeders. One of the most common causes of death from choking is the swallowing of imperfectly chewed meat. The advice of medical practitioners to avoid the use of uncooked vegetables and fruit in the tropics without removing the outer skins is necessary, not because of any intrinsic property of the fruit itself, but because disease germs are so prevalent in those climates that all foods, vegetable as well as animal, are likely to be contaminated. The eating of raw meats in the tropics would likely give rise to still greater perils than the eating of raw fruits and vegetables.

Raw fruits and vegetables may be disinfected by washing and dipping in a one per cent solution of peroxide of hydrogen.

Ergotism is one of the rarest of disorders, whereas chronic autointoxication, the result of inoculation of the intestine with meat germs and the putrefaction of undigested residues of meat in the colon, is universal among meat eaters, including lions, tigers, dogs, and other flesh-eating animals.

# Need of Meat Inspection

According to W. P. Jones, formerly attorney for the U. S. Department of Agriculture, less than one-third of the cities of the United States having a population of 5,000 or more, make any provision for the inspection of meats; yet this class of foodstuffs is more likely than any other to be rendered unfit for food by disease or deterioration. Within the year ending June 30, 1919, more than 70,000,000 animals were slaughtered in the United States under Federal Inspection. At least half as many more animals were slaughtered without inspection.

Says Mr. J. R. Mohler, Chief of the Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C.:

"The great need of an efficient meat inspection is shown by the number of animals and the quantities of meats and products which are condemned yearly on account of disease, unsoundness, or other conditions of unfitness, and thereby excluded from the food supply. The complete figures for all classes of animals and the various reasons for condemnation involve considerable detail. However, a general statement regarding them should serve the present purpose. For instance, on the post-mortem inspection alone there was condemned in the fiscal year 1919 a total of 212,245 cattle, sheep, swine and goats; while organs and parts of carcasses condemned on account of localized disease run into the hundreds of thousands." (*Amer. Jour. of Public Health,* May, 1920).

John Roberts, of the Bureau of Animal Industry, states in an article in the *American Journal of Public Health* for September. that "a calculation was made for the fiscal year 1917 which showed that the total condemnations, including reinspected products, were 1.08% by weight of the estimated total inspections. When this figure is compared with the above mentioned New York percentage, 8.27, we may, perhaps, get some idea of the potential difference in quality between the animals that come under the Federal inspection and those that are marked in places where it is known they will not have to run the gauntlet of the Government inspection."

From the above, it appears that at least one out of twelve of the animals eaten without inspection is in a state of disease so advanced that it should be condemned as an article of food. The danger of infection by the use of diseased meat is eight times as great in places where inspection does not exist as where Federal inspection is carried on.

In some places in which meats are inspected, the rejected animals are fed to hogs, and the hogs afterwards fed to human beings, which certainly does not help the situation.

This question is one which should receive the prompt and serious attention of our legislative bodies, both State and municipal.

# The Candy Habit and Diabetes

Increasing diabetes may be due to the candy habit. Allen, of the Rockefeller Institute, whose researches have extended over several years, and fully confirmed the original observations by Guelpa respecting the value of underfeeding in the treatment of diabetes, has recently demonstrated that sugar, particularly glucose, has a much more powerful influence in developing diabetes than does sugar in animals in which diabetes has been artificially induced and which were progressing favorably toward complete recovery on a diet of starch. The replacement of some of the starch by glucose had the effect of rapidly developing hopeless diabetes.

This observation is highly significant in view of the fact that glucose has for years been extensively employed in the manufacture of confectionery of all sorts. Being made from corn by a chemical process, it is much cheaper than cane sugar; and with sugar selling at the high prices which have prevailed in recent years, it is quite natural that glucose should be used more and more extensively.

The reason for the great injury resulting from the use of glucose is its very rapid absorption. Cane sugar requires digestion before it can be absorbed, and hence is more slowly taken up by the absorbent vessels.

There seems to be little room for doubt that the excessive use of cane sugar, and especially the use of glucose, is responsible for the appallingly rapid increase of diabetes in this country.

# How to Discard Flesh Meats Safely

The radical diet reformer will exclaim at once that the safe way to discard meat is to drop it. But there are thousands of persons who have tried the experiment of going without meat, and after a few months' experience have returned to the flesh pots, testifying that they somehow did not feel so well on a fleshless diet. The writer has known hundreds of persons who, after becoming weak and debilitated on a non-flesh dietary, have recovered their vigor through resuming the use of flesh. This experience has indeed been a very common one. Probably the number of people who have attempted strict vegetarianism and given it up is ten or twenty times as great as the number who have permanently adopted a non-flesh regimen.

The philosophy of vegetarianism is so reasonable, its ideas so enticingly aesthetic and harmonious with the finest human instincts, and the scientific argument in its favor is so wholly unanswerable, that there is little difficulty in convincing any fair-minded person of its great advantages; but often, when the mind is convinced, there still remains an instinctive query whether, after all, the complete disuse of flesh foods is safe; and when it happens, as is often the case, that the investigator has known of individuals who have made unsuccessful experiments with the vegetarian diet, the doubt is usually a sufficiently large obstacle to prevent any radical change of habits.

One purpose of this article is to show that there do exist real difficulties and dangers in the path of the individual who discards meat, and which have led to so many failures in individual experiments with vegetarianism that they have, as a matter of fact, constituted the greatest obstacle to the progress of this phase of diet reform.

Another, and the leading purpose of the article, is to point out just what these dangers are and how they may be easily and successfully avoided. Twenty years ago, even ten years ago, this article could not have been written; for until recently lack of scientific knowledge has compelled diet reformers, as well as everybody else, to grope in darkness, learning a little now and then by painful experience, often making miserable failures because uninformed as to what really constitutes the essentials of a complete human dietary. But within recent years, through experiments in animal feeding carried on in various laboratories by eminent men of science, the fundamental principles of human nutrition have been made known, and it is now easy to understand how and why flesh foods have come to be regarded in certain parts of the world as important food staples, while by many millions of people in other parts of the world, they are largely or even wholly discarded.

According to modern studies, it is not sufficient that the food should contain an adequate amount of protein, fats, and carbohydrates; but to these food essentials must be added suitable quantities of lime for the bones and other tissues, iron for the blood, and vitamines as vital stimulants and regulators of nutrition. The vital importance of the last three food essentials has not been known to science until recent times, and consequently has not received the proper attention from food reformers.

Another fact of equal importance bearing on this question is the discovery, in very recent times, that proteins differ greatly among themselves, and are by no means equivalent; that is, certain proteins, known as complete proteins, when taken into the body in proper quantities may be wholly utilized in tissue building because they contain exactly the elements needed, no more and no less, by the muscles, nerves, glands, and other nitrogenous tissues. On the other hand, there are other proteins which, when taken in the same quantity, do not afford the body the same amount of nourishment, for the reason that they are "complete" only to the extent of 40 per cent, 25 per cent, or even as low as 10 per cent, of their total weight, the remainder consisting of material which the body cannot utilize in tissue building. These proteins, known as incomplete proteins, are very abundant in vegetable foods; in fact, nearly all vegetable proteins belong to this class, whereas the proteins of meat, milk and eggs are complete proteins. It is thus evident that the proteins of meat possess a certain advantage over vegetable proteins in that they may be utilized to the extent of 100 per cent, whereas vegetable proteins may be utilized only to 25 or 30 per cent or even less.

It is evident, then, that in arranging a bill of fare, either with or without meat, it is most important to know not only whether one has eaten a sufficient amount of food as estimated in calories, but whether all the food essentials are present in suitable proportion; and because of our lack of familiarity with them it is especially necessary to inquire about vitamines, lime, iron and complete proteins.

In discarding meats from the bill of fare there is no occasion for concern in relation to lime, for the reason that animal flesh is almost wholly lacking in this element. The lime of an animal's body is almost wholly found in the bones, the soft parts containing less than one per cent of the total lime content. Carnivorous animals eat most of the bones of their victims as well as the soft parts. The cave men ground bones to powder and ate it with the flesh, and the Indians of the Northwest whom Lewis and Clark found living on dried fish, consumed the bones with the flesh after crushing them in their stone or wooden mortars.

In the matter of vitamines, also, the flesh abstainer need have no concern, for flesh food is very deficient in vitamines. In the animal body the vitamines are, for the most part, concentrated in the liver, kidneys and other glands. It is for this reason that the Eskimo finds it necessary to eat the liver of seals in order to escape scurvy and other deficiency diseases.

But the case is different with protein. Beans, often mentioned as a substitute for flesh foods because they contain a large proportion of protein, may prove disappointing for the reason that the proteins of beans have been shown to be, for the most part, incomplete, having scarcely more than 10 per cent their face value as tissue building material when eaten alone.

As before remarked, nearly all vegetable proteins are incomplete. The protein of the soy bean, however, as well as that of the peanut, the almond, and various other nuts, has been shown to be of high quality, practically equal to the protein of flesh. It is to be noted, also, that the proteins of milk or eggs are fully equal to the proteins of meat in quality, and so in this particular meat possesses no exclusive value. But when meat is discarded, it is evidently necessary that care should be taken to supply in its place an adequate amount of protein derived from the soy bean, the peanut, the almond or other nuts, or from milk or eggs. Four or five ounces of soy beans, peanuts or almonds afford an abundance of protein for a day's ration; but half the quantities named will prove sufficient to supplement the proteins of an ordinary varied vegetable diet from which meat is wholly excluded. A pint and a half of milk or two eggs will serve equally well to supplement an ordinary day's ration otherwise consisting exclusively of vegetable foodstuffs.

It is equally or perhaps more important that the iron content of the food should be considered. One loses each day nearly a quarter of a grain of iron. This minute quantity is important, for the reason that if it is not replaced, in three weeks' time half of all the iron in the body may be lost, which means a loss of one-half the blood; for the iron of the body is almost wholly found in the blood, of which it is an essential constituent, just as lime, an essential constituent of the skeleton, is found chiefly in the bones.

Food iron is abundant in meat because of the blood retained in the tissues. This is especially true of red meats. The ordinary mixed eater derives nearly all his iron from the meat which he eats, although the iron of flesh is not of the finest quality. Having once been used, it is less suited for use in blood building than the iron from vegetable sources. When meat is dropped from a mixed bill of fare, the remaining foodstuffs, such as potatoes, white bread, sugar, coffee, butter, cornflakes, rice flakes, boiled rice, griddle cakes, and the various soups, entrees and desserts which appear on the ordinary breakfast, dinner, and supper bills of fare, are almost wholly lacking in iron. So when the food reformer drops meat and adds nothing to take its place as a source of iron he begins at once to lose a part of his blood iron, of which he normally possesses only 45 grains, and his blood likewise begins to deteriorate.

Fortunately, the loss of iron is not a necessary consequence of the disuse of meats, for while many vegetables — in fact, the majority of foods in current use in civilized countries—are lacking in iron, there are a few foodstuffs, readily accessible, which are sufficiently rich in iron to easily take the place of the most ruddy beefsteaks. The green leaf is the original source from which the ox derives the iron which gives him his red blood and rosy flesh. The chlorophyl of the green parts of plants is rich in iron which has been specially prepared by Nature for use as food, and so is easily assimilable. Greens of all sorts contain an abundant supply of iron. Ounce for ounce, spinach contains more iron than sirloin or tenderloin or roast; and some greens, such as curly-leaved dock and red root, furnish in one ounce two or three times as much iron as is furnished by the same amount of lean meat. The fat of meat contains, of course, no iron. Certain nuts, as the almond and filbert, and certain fruits, as the date and the fig, are very rich in iron, and that of the choicest quality.

All the cereals and root vegetables are rather poor in iron. Milk also contains very little of it. The yolks of eggs contain a fine quality of iron adapted for food, and in larger quantity accordingly than is found in meats.

It is evident, then, that we are in no wise dependent on meat for any food essential, but it is equally evident, however, that when meat has been depended upon as the sole source of certain food essentials, such as complete proteins and iron, if flesh is discarded from the bill of fare, these food essentials must be supplied from other sources. Fortunately, the complete protein may be easily supplied by a glass of milk or buttermilk at each meal. Skimmed milk will also answer the purpose perfectly, or three or four ounces of cottage cheese.

To supply the necessary food iron, one who discards meat must take care to make a liberal serving of greens a part of every day's ration. To make sure of an adequate supply of iron, it is better to eat greens at two of the daily meals. It is a good plan to use molasses instead of sugar, for molasses contains a considerable amount of iron, while sugar contains none; and better still is it to substitute dates or figs for cane sugar, for dates and figs present sugar in a more wholesome form, and, besides, supply with the sugar, the lime and iron which Nature associates with it.

It thus appears that the scientific discoveries of recent years relating to nutrition have in no way weakened the position of those who advocate biologic living or the discarding of flesh foods, but. to the contrary, fully justify the ground on which food reformers have long stood with reference to the non-necessity of flesh-eating, and show in a very exact manner how flesh foods may be discarded, not only with perfect safety but with great advantage. In view of these facts, and with the aid of the suggestions in this article, the writer does not hesitate to say that any one to whom ordinary foodstuffs are available may discard flesh foods at once and forever, not only without incurring the smallest risk of depreciation of vital stamina and vigor, but with the distinct advantage of adding to his strength and efficiency, to immunity from disease and length of life and useful activity.

As aids to those who desire to discard flesh foods from their dietary, though not essential, various special food preparations are offered. Among those especially useful, and which are usually much appreciated, are the following:

Protose, a meat-like preparation prepared from vegetable proteins, including the complete proteins supplied by the peanut. Protose can be prepared and served in nearly all the different ways in which meat is served. It has a meaty flavor and is slightly fibrous. It has much the appearance of potted veal. Protose contains as much food iron as the best beefsteak.

Nuttolene, a meaty food prepared from the peanut, tasty, wholesome, easily digestible, rich in complete protein.

Meltose or malt sugar, which has the advantage over cane sugar that it is much more readily absorbed and does not irritate the stomach. It can be eaten very freely without injury, being native to the body. Malt sugar, unlike cane sugar, is rich in iron. An ounce of meltose contains as much iron as beefsteak. It is supplied either in the form of dry powder or syrup.

Savora, a vegetable extract which resembles meat extract in flavor. It differs from meat extract, in fact, only in lacking the unpleasant gluey taste which necessarily accompanies extracts prepared from meats. Savora supplies in concentrated form the flavor found in the finest varieties of mushrooms. Savora is also remarkably rich in iron, a teaspoonful of this extract containing more food iron than several ounces of the best tenderloin steak.

# Diet and Kidney Work

The liver and the kidneys cooperate in protecting the body against the destructive influence of the waste and poisonous substances derived respectively from the activities of the body cells and the unutilized protein of the body. It has been clearly shown by extended clinical observation that over-loading these essential vital organs with work by eating an excess of protein is one of the most potent prolific causes of disease. The experiments of Chittenden, by which this was clearly demonstrated, have been fully and repeatedly confirmed by more recent investigations.

It is evident, then, that a diet which is sufficient to maintain the body in a state of health and to fully support its activities, while at the same time taxing the liver and the kidneys to a minimum extent, must be in the highest degree suited to the promotion of endurance and lengevity.

A research conducted by Campbell, at Singapore, and reported in the *Biochemical Journal* (1919), clearly dmonstrates the advantage of a low protein diet. The subjects included the study of the urine in a Brahmin, a Chinese, a Tamil, a Malay, a Hindoo, an Eurasian, a Bengali, a Sikh, and an European. The Brahmin and the Hindoo were vegetarians; the others lived on a mxed diet.

It was found that the Brahmin and the Hindoo eliminated much smaller quantities of urea and other waste substances than any of the other subjects and very much less (scarcely half) than the average European (.11 grams N. per kilogram and .127 for the Hindoo).

J. H. Kellogg

# Gardens and Health

## W. R. BEATTIE

Home gardens, advocated during war time as a means of increasing the food supply, accomplished this and more; for they not only fed the people but gave them outdoor life and health as well. Among the thousands of letters received by the Agricultural Department at Washington are many telling of the blessing of health that has come to entire families as a result of their open-air work in the garden. The members of these families have not only found the open air beneficial but have discovered the true value of a bountiful supply of fresh vegetables for their tables. Some of the reports are really pathetic in their recital of the benefits that have come as a result of the work in the home garden.

During the past few years there has been an extreme tendency on the part of American people to concentrate in trade centers. Thousands of farms have been practically abandoned, and today with all the congestion of city housing conditions there are many country homes that are occupied only by the few old folks left behind in the rush to the cities. The lure of high wages and short hours has caused the people to forsake the country for the city, and any measure that will take them out of crowded apartments into the open, even for a short period each day, will have a beneficial effect upon the general health conditions. When we began our history as a country, about 87 per cent of our population tilled the soil. Today it is doubtful if more than 32 per cent are living on the land and working in the open. There is bound to be a reaction and more people seek a home in the country, but until this change comes, and for all time for that matter, it will be desirable to maintain a system of community or city home gardens for the benefit of those who are willing to spend their spare time in the cultivation of a small piece of land.

Denmark, and especially the city of Copenhagen, has gone far ahead of us in the solution of this problem. Many years ago the city authorities in Copenhagen arranged for the use of unoccupied tracts of land in and about the city, these being divided into small plots and allotted to families as garden sites. These little farms, only 1-8 or 1-10 of an acre in size, are assigned to a family indefinitely or so long as they give them the proper cultivation. Frequently, in fact as a rule, a little summer house is built on one corner of the plot and a flag pole raised at the entrance. Here the family assemble evenings after working hours, cultivate their garden and enjoy their evening meal under the protection of the little summer house. This gives them not only outdoor exercise and plenty of fresh air but brings the family together in a social way and unites them upon one common proposition. An authority on this work in Denmark has stated that these community gardens have been one of the greatest factors in the making of citizens, and that they have taught the people the value of depending upon their own resources. Illness among these people is almost unknown, because they live in the open, eat an abundance of fresh vegetables, and live regular, well-balanced lives.

We have in America some splendid examples of what may be accomplished in the way of community home gardening. In Philadelphia, the Vacant Lots Cultivation Association has been in existence for 23

A Garden in a Vacant Lot

years and has achieved wonderful results in helping people to help themselves. The annual report of its directors contains the following:

"To adequately report the results and benefits of our work it would seem necessary to picture a panorama including almost as many different views as there are families to whom we have assigned gardens; hundreds of them during the past year and thousands during the seasons that have gone before.

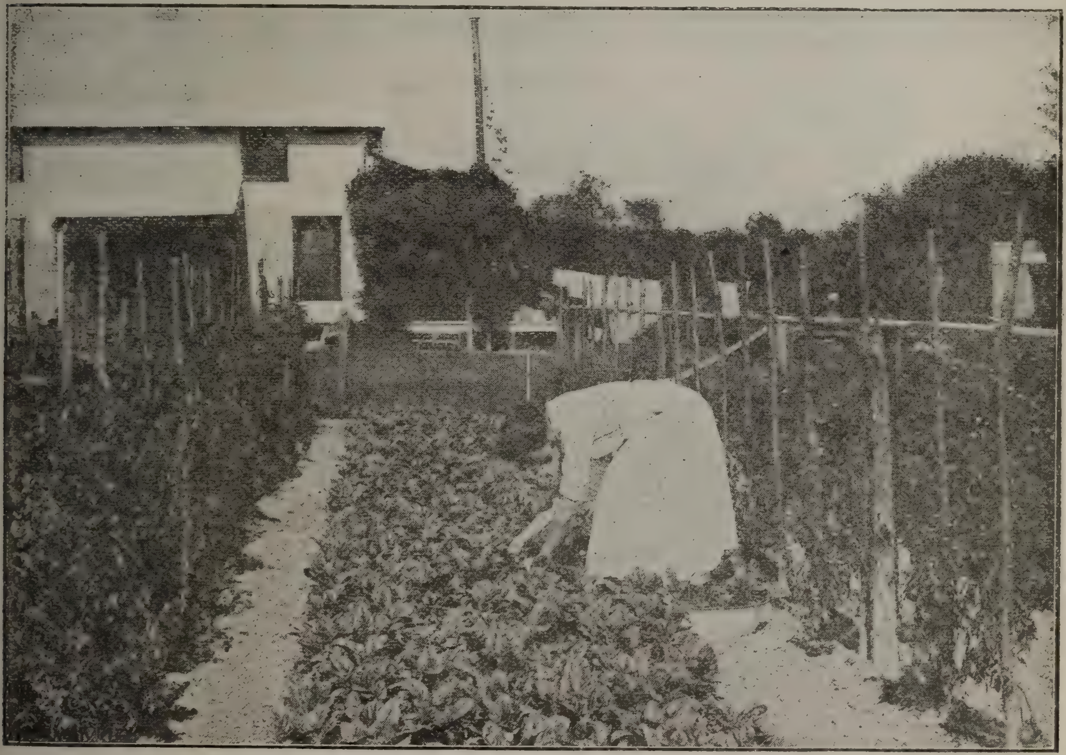
"Then, too, the ill ones themselves have found in the garden work a great aid in regaining health, additionally so as it cheered their minds with the knowledge that they were able while convalescing to relieve their families of some of the burden of their support. There were also hundreds of men, women and children who, by reason of their opportunity to work the gardens, enjoyed greatly improved health, which they could not have afforded to acquire if it had not been that by this work in the open air they were able to also produce something of value at the same time.

"And in looking over the various beneficiaries of the work, one cannot forget the numerous old people, some of whom have had gardens with us a number of years. As mentioned before, their ages reach up to the ninetieth year, and they are still making good records in their gardening work.

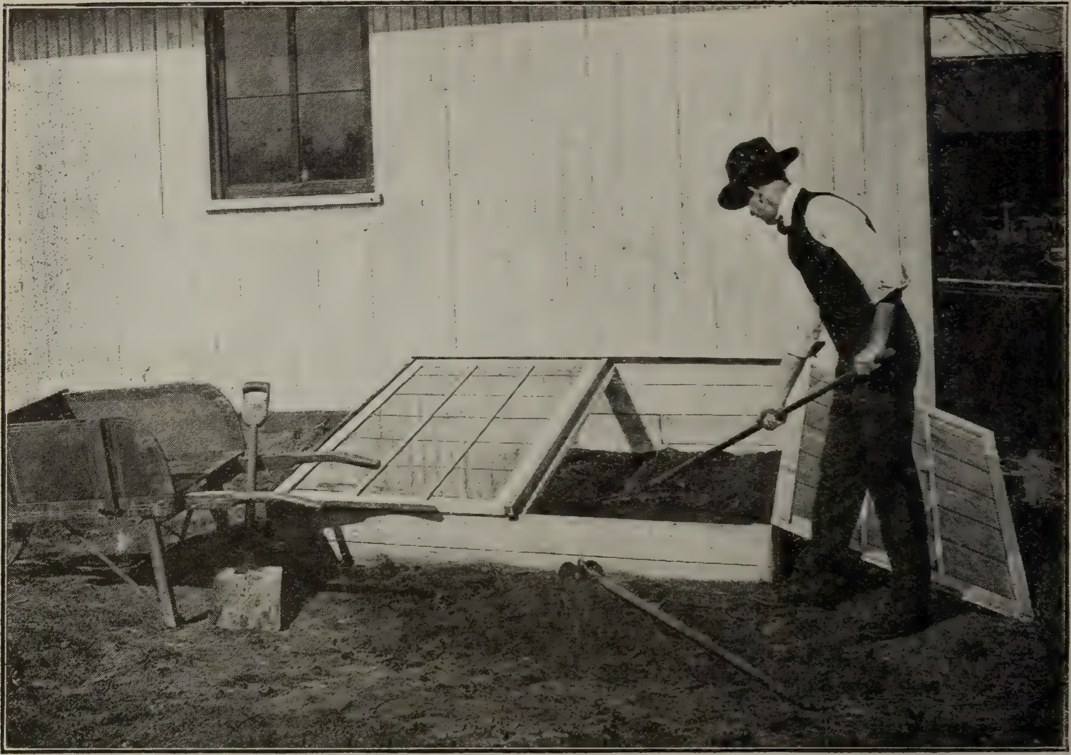
"Every influence of the work has had a wholesome result. What can be better for the body than a season's work in the open air and sunshine? What better influence is there upon the mind than to realize that the developing results on each little farm depend upon the careful and energetic work of the gardening families?"

Another example is that of the Potomac Garden Club in Washington, D. C. This organization started during the war period with a small membership to whom cultivated plots of ground were allotted in East Potomac Park. It is a fine sight indeed on a pleasant evening or on a Saturday afternoon to see not only the men but the women and children assembling at these gardens and devoting their spare time to the cultivation of their plots. All classes and occupations are included among the city home gardeners. There are government clerks, store clerks, bank employees, laborers, doctors, lawyers, college professors, public officials, and last but not least, the preachers, who have heard of the wonderful sedative influence upon tired and tried nerve systems and who by the sweat of their brow are regaining lost vitality. What matter if the Sunday morning lesson be taken from "And a sower went forth to sow and some seed fell upon good ground, etc.," so long as the lesson is inspired by a close contact with Nature.

When the work was first started, it was said that these people, having had little or no experience, would not succeed; but this has not proven to be true, and families that have never had any previous garden experience, by following the leadership of those who have had experience, have been enabled to produce an enormous amount of food on their gardens. To reach the Potomac gardens, the gardeners walk about one-half mile or ride in their automobiles, as many of them do, spend the evening in the open air, frequently eating their evening meal on the parking in front of the gardens, and later going home tired but happy, taking with them great baskets of fresh vegetables —the results of their own effort and care. How much better prepared for the work of the following day are these people who spend their evening and twilight in the open and then have a peaceful and restful night than those who have remained shut in



A Back Yard Home Garden



Great Possibilities in a Small Hot-Bed

their apartments or in crowded places of entertainment, and have gone to their rest at night without the invigorating influence of plenty of wholesome fresh air and outdoor recreation.

Perhaps the greatest effect is that upon the children, who are permitted to play in the soil and in many cases to cultivate a small corner of the garden for themselves. This not only occupies their minds and their hands but teaches them the ways of Nature as well. As a result of their work in these little gardens these boys and girls will know the different kinds of crops and will have a knowledge of Nature acquired only by direct contact.

Thousands upon thousands of home gardens have been and are being cultivated in the backyards and the side yards, and on vacant lots near where the people live. These are really preferable to the location in the community gardens, but it is not always that there is sufficient space for a garden near the home. It has been a surprise to those connected with the work to see how much can be grown and how much pleasure and health can be gotten out of the cultivation of a small plot of ground attached to the home.

One of the great results that has come to this country from the World War is that many of its people have been taught to do something useful, and in so doing have forgotten their nerves and their ailments. Nothing so effectively contributes to this as the work of a garden with its many and intricate problems of soil, seeds, plants, cultivation, the control of insects and diseases, and a myriad of other things that must be overcome. By the time the garden has been planted and the seeds have begun to sprout, all thought of nervous disorders will have disappeared, and by the time the crops are all gathered in the autumn, a complete cure will often have been effected.

The loss of an arm or a limb is considered a great misfortune, but one of the most successful of our gardeners is George Williams, of Anacostia, D. C., who has only one arm, yet cultivates three large city lots after office hours, and in addition to supplying his own table, has sold enough fruits and vegetables to his office associates the past three seasons to more than pay for the lots. Mr. Williams says that his garden is his greatest pleasure, and a look at his three sturdy children is proof that they are not undernourished, though their diet includes a large proportion of vegetables.

This class of work is being promoted and encouraged by the State colleges and extension forces, and by all those connected with educational work in agriculture throughout the country, and it is the dream of those in charge of the work that sooner or later every city will provide suitable space either within the city limits or nearby for allotment as home gardens, and that these spaces shall be maintained not merely as a source of income but primarily as a means of promoting and improving living conditions and the health of the people. The American people have gone to an extreme in seeking amusement in crowded places, and anything that will take them into the open and give them profitable exercise will prove a blessing.

Mr. Williams at Work in His Garden

# Is Salt a Proper Food?

For centuries the practice of adding chloride of sodium, or common salt, to many foodstuffs, particularly cereals, meats, and vegetables, has been current among civilized people. The use of sodium chloride seems to have been, for the most part, unknown to the North American Indians at the time of the discovery of America; and Indian tribes living remote from civilization, as in the Hudson Bay region and perhaps in a few other isolated localities, still thrive on a saltless diet. The Indians of the Hudson Bay region, when compelled to eat salt beef, soak the meat over night in an abundance of water, turn off the water, then add fresh water and boil for an hour, and then again for a third time place the meat in fresh water to continue the cooking, thus getting rid of the salt flavor of the meat as thoroughly as possible. Millions of natives of Central Africa never taste salt. The great herds of cattle on the Western plains are fattened without salt.

It has in recent years been established by the researches of Mosse, Achard and others, that ordinary foodstuffs contain a sufficient amount of salt to meet the actual requirements of the body without the addition of the saline mineral in its ordinary form.

Among civilized people, however, the excessive use of salt is almost universal. One result of this excess is overwork of the kidneys. Another ill effect is believed to be overstimulation of the gastric glands, which are thus led to produce an excess of gastric acid, which is formed from salt. It is probable that the use of salt as an addition to foodstuffs is due to the desire to give them a more piquant taste. The natives of India use curry, a hot condiment, with their rice instead of salt. Bunge believed that salt is necessary with vegetable foods to take the place of the excess of potash which they contain, but Remmerich and Kurz, by experiments upon dogs, have disproved this theory, showing that the use of foods containing potash salts does not drive out the soda salts, but that they are retained by the body in normal proportion.

Dr. Achard and Professor Richet of Paris, have in recent years made extensive investigations by which they have shown that while salt is found in the tissues of all animals, it is also found in all vegetable structures and in sufficient quantity in ordinary foodstuffs to supply the needs of the body.

According to these observers, the amount of salt found per 1000 parts of animal tissues is for different animals as follows:

| | |
|---|---|
| Insects | 6 parts |
| Birds | 7 parts |
| Land mammals | 7 parts |
| Sea mammals | 8 parts |
| Salt water fish | 20 parts |
| Fresh water fish | 8 parts |

Human blood contains 3 parts of sodium chloride to 1,000 parts.

The salt leaves the body chiefly through the kidneys and the skin.

The average person takes about two-thirds of an ounce of salt daily. Of this about one-eighth is lost through the skin, most of the remainder through the kidneys. In fasting, salt almost entirely disappears from the urine. Observations on the Italian faster, Succi, showed that after fifteen days of fasting, the urine contained only three grains of salt in twenty-four hours, or about one one-hundredth part of the amount frequently found in the urine.

The use of chloride of sodium raises the blood-pressure. When salt is removed from the body by profuse sweating or by copious water-drinking, the blood-pressure falls.

Richet, an eminent French scientist, has shown that the food required for a day's ration contains naturally half a dram of salt. Numerous experiments have shown that this amount of salt is exactly the amount which the body requires, and that no more is actually needed. In fact, Richet claims that the amount actually required by the body is even less than half a dram. More than this, as this distinguished scientist says, is luxury and not necessity.

Dropsy is produced in the great majority of cases by the excessive accumulation of salt in the tissues; the kidneys being unable to eliminate salt, it is pushed out into the tissues and of course must be held in solution by water. For every half ounce of salt retained, a pound of water will be retained to hold it in solution. This is shown by the rapid increase in weight when the kidneys cease to eliminate salt.

Many observations have shown that the kidneys fail to remove chloride of sodium at the usual rate in various diseases, particularly in pneumonia, pleurisy, Bright's disease, some forms of heart disease, erysipelas, typhoid fever, jaundice, cirrhosis of the liver, scarlet fever, smallpox, edema, and dropsy.

By careful observation, it has been found that the retention of salt occurs before dropsy or edema makes its appearance. Several cases which have come under the writer's observation are of interest in this connection. The urine of a patient suffering from diabetes in a moderate degree was found to contain no chloride of sodium whatever, although the amount taken in the food must have amounted to at least one or two drams. Several examinations made within twenty-four hours showed not a trace of chloride of sodium in the urine. This was the first indication that the patient's condition was serious. In another twenty-four hours the patient was dead, in spite of all that could be done to prevent a fatal termination. The failure of the kidneys to eliminate chloride of sodium was evidence that these organs had ceased to do efficient work, and the rapid accumulation of poisons in the body resulted in the patient's death, the kidneys evidently being so far damaged that it was impossible to restore them to normal activity.

In another case, a patient suffering from cardiac disease was found to be eliminating through the kidneys only a very small amount of chloride of sodium, less than one grain, or about one-hundredth part of the amount usually eliminated. This patient likewise died a few hours later. The kidneys were found in an advanced state of degeneration, the case being absolutely hopeless.

Many similar cases might be cited, including a number of cases in which the withdrawal of salt has been followed by the disappearance of the dropsy and other unpleasant symptoms.

A story which seems to have originated with an old writer, John Marshall, and which has been repeated by many authors, tells us that the ancient laws of Holland required that criminals should be given bread without salt until they were devoured by worms which developed in their intestines. The story has been in modern times wholly discredited. Numerous persons have discarded salt wholly and lived entirely without it without suffering any injury. Within recent years it has become the custom of physicians to place persons suffering from epilepsy upon a saltless diet. The salt-free regimen has also been used in other disorders. These persons under treatment have frequently discarded salt entirely from their dietary, except so far as it is contained in natural foodstuffs, for months at a time, and without injury.

Linossier showed in 1900 that a proportion of three parts of salt and one thousand of gastric juice retarded the digestion of albumen to the same extent as a 40 to 50 per cent diminution in the amount of pepsin. Three parts of chloride of sodium to one thousand of gastric juice is practically the proportion of salt found in the gastric contents after an ordinary meal. From this it is evident that while the intake of an excessive quantity of salt increases the amount of hydrochloric acid produced by the stomach, the digestive activity of the gastric juice is diminished.

Luifer reports the case of a young girl who suffered from anemia, emaciation, and dyspepsia as the result of the excessive use of salt.

An ounce of salt taken in a quart of water produces a decided laxative effect.

If to a dog is administered one two-hundredth of its weight of salt (a little more than 30 ounces for a dog weighing 40 pounds), the animal falls into convulsions and dies.

A case is reported of the death of a young woman who died after taking a half pound of salt as a vermifuge.

In a case of a man who died after taking a large dose of salt, marked changes were found in the kidneys, which leads to the conclusion that the habitual use of salt in excess may lead to chronic disease of the kidneys. Bunge called attention to this important fact nearly fifty years ago.

According to Torindo, the excessive use of salt is a cause of Bright's disease. It is well known that salt increases the amount of albumen in cases of Bright's disease.

Withdrawal of salt by a salt-free dietary has been found of very great value in the treatment of general dropsy and abdominal dropsy when due to either disease of the kidneys or disease of the heart.

The elimination of salt is also a valuable means of reducing high blood pressure.

Leading European medical journals have reported obstinate cases of eczema in which a cure has been effected by the adoption of a diet free from salt or nearly so.

Not infrequently when the salt is withdrawn in cases of dropsy, the excess of fluid disappears almost wholly within a few days.

The following table, based upon a table by Strauss, shows the amount of chloride of sodium per pound found in some common foodstuffs:

RAW FOODS

| | Grains |
|---|---|
| Unsalted butter | 1.04 |
| Yolk of eggs | 1.04 |
| Fruits of various sorts | 4.2 |
| Meat, unsalted | 7.0 |
| Vegetables and salads | 7.0 |
| Cereals | .70 to 7.0 |
| Milk | 10.5 to 12.6 |
| Eggs | 9.8 |
| White of egg | 13.3 |
| Salted butter | 70.0 |
| Cheese | 105.0 to 175.0 |

COOKED FOODS

| | Grains |
|---|---|
| Poached eggs | 35.0 |
| Fruit | 35.0 |
| White bread | 35.0 |
| Brown bread | 52.5 |
| Cauliflower | 35.0 to 63.3 |
| Cabbage | 35.0 to 70.0 |
| Roast beef | 133.0 to 196.0 |
| Beefsteak | 210.0 |
| Poached eggs | 18.0 |
| Omelets | 189.0 |
| Asparagus | 189.0 to 245.0 |

# The Salvation Army Report on Prohibition

Colonel Peart, a Salvation Army commissioner, reports that prohibition has relieved the Army of the task of salvaging drunkards. He says:

"In the year before the war we had about nineteen thousand men working in our industrial shops, 75 per cent. of whom attributed their status to drink. With the coming of war, these 19,000 were reduced to six or seven thousand. Some of them enlisted, some went into war factories, some were drafted. The work in the shops was almost entirely carried on by old men and cripples who had always come to the Salvation Army for work.

"The war ended. Then the prohibition

law went into effect in July, 1919. Our warerooms, except for those whom we always shall have with us, were soon deserted. The drunkards had disappeared.

"Christmas came. That was the time when our halls were always filled to the last square inch with men who were picked up in the streets in all states of inebriety. But last Christmas we could hardly corral a handful. And the dead calm in our workrooms and in our dormitories has continued. There are no men to fill the places. The sorting and the mending and the polishing and the fixing are piling up. It seems as if we'll have to hire outside help to continue that branch of the service."

No better testimony than the foregoing could be found for the benefits of prohibition; and it is to be noted than the number of drunkards cared for by the Salvation Army must constitute only a very small percentage of the total number of men who have, through prohibition, been rescued from slavery to alcohol. The jails throughout the country are, like the Salvation Army homes, scantily tenanted, and already tens of thousands of newly built cottages witness to the fact that millions of dollars formerly spent for drink are now being invested in homes, which will not be invaded by the demon drink.

# An Indian Summer Canoe Trip

R. V. ASHLEY

In all the round calendar of months there is no other time like Indian Summer for contact with the out-of-doors. There is no other time so potent with physical and mental stimuli; and too bad it is that with the first hard frosts of fall, mankind at once, with something of a spasmodic hysteria, seeks sure protection from wind and weather within enveloping walls, forgetting that next to food and drink the fresh air, the light and rugged exercise out of doors are the greatest of all life-giving elements.

Come along with the boy and me while we make a happy raid, via paddle, canoe and stream, into the heart of our Indian summer.

As we are city dwellers and our city is bisected by a beautiful, placid stream of crystal water, we shall make our start where a great bend of the river forms one boundary of our municipal playground.

At one end of the water front the river widens into a lagoon, with a gently sloping floor of crystal sand, constituting a large-scale idealization of the old "swimmin' hole." The rest of the water front is paved and walled with granite, affording a continuous landing place capable of accommodating launches, boats and canoes by the score. The gentle expanse of clear water is most inviting to those who wish to ride upon the river in canoe, skiff or launch, and its dimensions are such as to encourage not only all sorts of water sports, but, on gala days, canoes and boat races of considerable magnitude.

Here we board our canoe, the boy and I, after having loaded it with a small tent, a few cooking utensils and such food as we may wish for two or three meals. The canoe is a fairy craft, light but staunch. Its every line is one of beauty, expressing the poetry of motion, and with every strong, well directed paddle stroke, it fairly leaps through the water. On the other hand, when time and distance are of no consequence, the measured but quiet and steady strokes of the paddle, cause it to glide softly through the water. Imagine, if you can, floating on a bit of down in mid air, or the soaring of a hawk or an eagle, or the floating of a soap bubble, or a toy balloon, high in the air on a still summer day with just sufficient breeze to give direction to its motion. Such is the restfulness of floating in your own canoe, reclining on soft, thick cushions, the water being peaceful, the wind a mere zephyr, your body in a state of utter relaxation after a period of strenuous muscular exertion.

We are on our way. The canoe answers to the rhythmic strokes length by length as it measures the passing miles.

As we pass beyond the more thickly settled portions of the city, we find the river in its windings and turnings, passing between palatial estates, whose owners have not been slow to enrich the natural beauties of their landscapes and vistas. Channels leading from the river, form the basis of numerous water gardens, all beautiful, but various, each with an individuality all its own, some extensive, others quite diminutive, but all appropriate in their settings, proportionate to their surroundings and adding a definite note of cheer and comfort, especially on a hot summer's day. At this season, however, their garb is more sober, not to say somber, in aspect.

Beyond the private estates we come to the famous country club, which forms a connecting link, with its picturesque club house and its eighteen-hole course of velvet lawn following through valleys, over hills and around stately groves and craggy ledges, between the estates, on the one hand and the intensely cultivated market-gardens and wide, rolling farms, dotted with spacious red barns and comfortable farm houses which denote a prosperous farming community on the other. Here and there a few acres of low land have been developed into the richest of celery gardens and mint fields, with just enough of the low land left wild to remind one of primeval Nature.

The vigorous exercise of paddling, brings nearly all of the muscles strongly into play but particularly those of the trunk and arms. The blood is sent tingling into the remotest veins and capillaries and absorbs from the lungs an increased supply of oxygen which it carries to every tissue and organ, stimulating wonderfully all of the functions of secretion and excretion. The body becomes warm from this exertion, the cool of the morning is forgotten and the day becomes as mid-summer. We shed our coats, which at first were necessary for comfort.

As we glide smoothly and swiftly along the river, every passing bend reveals country less thickly settled. Dwellings become few and far between and the occasion groves, marshes and rocky gorges give us views of greater and greater expanses of Nature undisturbed and unadorned.

> "Now, often we forget all time, when lone,
> Admiring Nature's universal throne;
> Her woods, her wilds, her mountains, the intense
> Reply of hers to our intelligence!"

We pass through a gorge with high walls of dark sandstone on either side, showing wierd forms and shapes in bas relief which may be compared without undue stretch of the imagination to a miniature reproduction of the famous pictured rocks of Superior. At the top of the precipitous banks are large trees whose branches so nearly meet over head as to form a shaded canopy through which the direct rays of the sun seldom penetrate. There are strong echoes within the walls of this canon, so that even the paddle strokes may be successively heard in a diminuendo of reverberations, and a note of alarm from a disturbed water fowl fills the air with a rolling volume of fading cries.

As we emerge from the gorge, the surrounding country appears more hilly and rolling, but soon spreads out gradually into an undulating plain or prairie, still showing a luxuriant crop of wild prairie grasses and flower stems. The prairie grass, of course, has been whitened by the frosts, but still stands upright resembling not a little in its motion the waving of a field of grain. Every spear of grass and every flower stem and seed pod speaks of an earlier season of luxuriant verdure. The prairie is several hundred acres in extent and is dotted here and there with beautiful groves of maple, hickory, elm, birch and oak. The banks of the stream are but three or four feet above the water level. Ahead we approach a beautiful grove, the trees of which, because they retain their foliage at this late date and from their light yellow brown appearance, we know to be a grove of beeches. It is a clean grove, the trees are large, many of the trunks massive and the whole is more beautiful because the trees show no crowding. The ground beneath is as clean as a carpet and springy to the step. There is no underbrush, for the grove has been used as pasture and the low branches of the trees form a continuous canopy seven or eight feet above the ground.

It is noon by this time and we stop for lunch. The day has become balmy and so warm that the shade of the beech grove is most inviting. We eat our noonday lunch without fire and for dessert we feast upon the sweet meats of the beech nuts which are still found in abundance beneath the trees. Many of the trees this year have been loaded with nuts which are still plentiful, even though the squirrels have stored for their own winter use a larger supply than usual. We also find along the river banks an abundance of butternuts, and farther back, on higher ground, a sprinkling of black walnuts and shagbark hickories, with hazels in the thickets, affording a tempting variety of the richest of nuts, which supply the meat of our menu in ample variety.

After lunch we proceed on our course up stream. The water flows more swiftly now, and we bend to our paddles with more effort but with greater zest. The surrounding country gains in elevation and becomes even more rolling. We pass between banks that are densely wooded and we notice that, while the trees close to the water are mostly maples and beeches, with willows at the water's edge, those farther back, on the higher ground, are largely oaks—white, yellow, red and black. Occasionally we note a grove of peculiar beauty. We know the trees to be oaks, but their aspect is quite different from the others. As we approach by bends in the river, closer to the grove, we note by the contour of the trees and the shape of the leaves, that this grove consists mostly of that beautiful variety which is rapidly becoming rare in groves, the burr-oak. The trees are quite uniform in size, sometimes arranged almost with the regularity of orchard trees; and again standing more scattered and less formal. For the most part, these trees are of medium size, with rounded tops, suggesting somewhat the general form of a pear tree. As we pass on we see more and more of these beautiful trees. Occasionally they occur in copses, covering one to several acres in extent, with broad stretches of wild prairie land around and between. These copses and open stretches of course are quite irregular in arrangement and in extent. We quickly recognize that we have wandered into a stretch of country, now rare, in which the famed oak openings of the early days have been preserved in their original state. It is exceedingly uncommon in this late day to find so characteristic an arrangement of wooded ground surrounding open glades of prairie land which in summer is verdant with tender meadow grasses and ablaze with multitudes of bright prairie flowers. We recall that it was in such openings as these that the hunters of wild honey in the early days, were wont to find their bees and then trace them to their swarms and to their stores of sweetness. For in those days, wild honey was considered a staple by the early settlers, and with maple syrup, it constituted practically their only source of concentrated sweetening.

We can well imagine that on a dreamy summer's afternoon such a glade, completely surrounded by oak forests, the tall luxuriant grasses undulating like waves of the sea before a gentle breeze, the perfume of bright prairie flowers filling the air like incense, and the hum of busy bees gathering nectar for distilation into the sugar-sweet wild honey, is like the land "in which it seemed always afternoon," "a land where all things always seemed the same."

Boy and I decide that no better place could be found for a camp, especially as there is a bubbling spring of water in the bank of the river. Our canoe is pulled up beyond the possibility of disturbance by a sudden freshet. We pitch our tent and prepare our camp fire in such a way as to reflect the heat within the tent during the cool hours of the evening. The fire also is built with a view to cooking our evening meal quickly and well.

When all our arrangements for camp are completed, we start off for a hike to the top of a high hill not far away. We pass through a hedge row of second growth trees, hazel bushes and wild grapes, the fruit of the latter being the more vinous in flavor as a result of the fall frosts. A few of them give a keen zest to the appetite. Leaving the hedge row we enter a neglected old orchard, on the lower slopes of the hill, that still holds a memory of its bountiful fall crop. We fill our pockets with the apples, some of which have been touched by frost, so that the outside portion of the flesh has been transformed into most delicious cider. Such an apple on such a hike and such a day is eaten with the keenest relish, a relish which it is impossible to experience amid the formal appointments of civilized dwellings; and I surmise that the somewhat spirited and racy flavor of the apple is not alone within the apple itself but is partly due to the physical glow from muscular exertion, and to the season and the surroundings.

We reach the top of the hill, which for the most part is bare of vegetation. To the west, nestled in a distant valley, lies the city. The tops of the tall buildings, the steeples and towers, are brilliant in the slanting rays of the late afternoon sun and lower down the whole city is in shadow. The atmosphere at the distance is like a veil with the haziness characteristic of summer days in late October and early November. The thin smoke from the chimneys of industry, spreads out into low-hanging sheets of stratified cloud. We are too far distant to sense the hum of civilization and to us a deep peace seems to pervade the world.

We return to camp and find the fire which we had lighted before in the evening—building it carefully so that it could not spread disastrously—has subsided to a glowing mass of coals. We prepare in half an hour our simple lunch of roasted potatoes, baked beans, toasted bread sandwiches, apples, nuts and a hot drink. As we eat, the sun sinks below the distant hills. We pass gently into the silence of the night; around our camp fire, talking softly in mutual understanding, and then repair to our blankets. Our bed is made soft by a thick layer of fir or pine twigs. The season is late, so that there are few night sounds excepting the creaking of limbs and the swish of dying leaves, and the splashing of a water fowl or a leaping fish. Occasionally, however, we hear the hooting of an owl calling to its mate and the plaintive answer of the mate. Again the raucous call of a bird of prey breaks upon the silence of the night and we hear the whirring of the wings of a hawk gliding swiftly through the darkness, bent upon its nefarious business.

It is the end of a perfect day. We have earned the sleep that is restorative, and return again to our daily routine feeling fit to conquer a world.

# Ill Health and Long Life

HENRY M. STEGMAN

A breakdown in health is a grievous misfortune, so wide-spread and far-reaching are its consequences. Physical suffering is not always the worst of these. Mental distress, or even anguish, comes from the fears for the future of one's self and his dependents. Old associations must be given up; pleasures abandoned and a life-work dropped, perhaps permanently. Above and beyond all is the brooding thought of the possible nearness of what is, after all, the one great catastrophe of human life—death.

But in this dark hour begin the workings of that wonderful law which is the subject of Emerson's best-known essay. The man, like the British army in those dark spring days of 1918, has his back against the wall. He must fight and fight desperately. More or less has he known that his bodily deterioration was due to wrong habits; with the help of his physician he studies these causes so that he may abandon them. Tobacco, tea and coffee are dropped; the diet is simplified and perhaps cut down; work is replaced by recreation in the fresh air, and the various upbuilding methods of modern medical science are employed. In many thousands of cases, these remedial measures are successful. The man becomes conscious of his limitations. He may not again reach that state of physical exaltation where he "rejoiceth as a strong man to run a race;" but he has made a great gain in the knowledge that his future health and efficiency depend chiefly on his own endeavors. Like Dr. Samuel Johnson, he has learned that "your health is worth more than you can possibly spend on it." Wrong habits are eliminated, periodical tests are made of his bodily functions and organs to detect any incipient trouble, and life is taken up again with zest and enthusiasm.

But these, as Hamlet says, are "words, words, words." Many men have been through just this experience and have thereafter lived for half a century or more in usefulness and content. The mention of just a few of those who have plucked the flower of long life from the miasma of ill health, will bring more cheer to the ailing than a volume of general statements.

### Theodore Roosevelt

Examples crowd into the mind so that it is difficult to choose from them. Theodore Roosevelt's story has been told in these pages—how the puny boy, too weak to go to school, became the world famous synonym for tremendous strength, energy and power.

### Dr. Stephen Smith

There is a small group of men with whom readers of Good Health are familiar, who are likewise striking examples of the blessings that may be wrested from a defective organism. Dr. Stephen Smith, of New York City, comes first on the list by reason of having attained the age of ninety-seven with his faculties wonderfully unimpaired. Two years ago, when a banquet was given at the Battle Creek Sanitarium in honor of his ninety-fifth birthday, he thus told how his early misfortune had benefited him:

"Though well born on a farm in an unusually healthy district of Central New York, I scarcely had a well day until I was fifty. Indigestion in a severe form and its attendant autointoxication restricted me to the simple life. My diet was chiefly milk and cereals. At the age of fifty, I reached a kind of climacteric period, when my digestion became more normal, autointoxication diminished; and from that time to the present, there has been a gradual improvement in my physical condition, with all its accompanying enjoyments and privileges. Dr. Kellogg has diagnosed my case as one of acute colitis in the early periods of life when the digestive organs were maturing, which necessitated the use of a milk and cereal diet, this preserving them from the wear and tear of the usual mixed foods of that period. At the age of fifty, these organs had thus been preserved to their normal maturity, and thenceforth had the energy essential to complete the natural period of human life."

Two phases here invite emphasis. Think of a man who at ninety-five can say that for forty-five years he has been constantly improving in health! The deep significance of this experience lies in that other fact, that the abstention and self-control made necessary by his ailments, were the actual cause of this splendid upbuilding of the later decades. With a strong constitution to begin with, it is quite possible that Dr. Smith would not be alive today. It is sad to think of the brilliant Rufus Choate, dying unnecessarily at sixty, who when warned that he was ruining his constitution, replied: "I have no longer a constitution. I am living under the by-laws."

But these early years of suffering did not dim Dr. Smith's ambition to serve mankind, and renewed health brought more vigor to his purpose. His life has been fruitful along many lines of endeavor, as a physician, surgeon, teacher, author, sanitarian and philanthropist. Not only the State of New York, but the nation as well, has profited by that ill health which was the fount and origin of his long and useful years.

### Professor Irving Fisher

The name which next occurs is that of Professor Irving Fisher, of Yale University, who has been carrying on a large and noble work for many years after a serious breakdown. Owing to lung trouble, he had to give up his career and go to Colorado and California for an open-air life, where several years were spent in regaining his health. Not merely the curative powers of Nature but highly skilled medical help was needed to restore him to his former capacity for effort; but after this course in health training, he found himself accomplishing more work than in the well days of his early manhood. And those long months of apparent inactivity were greatly productive. They impressed on the exile the knowledge that each man, in so far as his health is concerned, is largely the master of his own fate, the captain of his soul. Furthermore, they brought home to him the vast economic waste, much of it preventable, of sickness among workers. Professor Fisher has since been a most conspicuous leader in the forces for upbuilding individual and national health. He was appointed chairman of the Committee of One Hundred on Public Health. In the Life Extension Institute, in his writings and addresses on proper living, his investigations into vegetarianism, his work against tobacco and tuberculosis, he is a big national asset. As the devil hates holy water, so Death must hate Irving Fisher. And thanks for these services to the human race must in some measure be given to that period of invalidism under Western skies.

It is a great tribute to the power for work that followed his return to active life, to say that all these labors are merely an avocation to him; for at the same time he carries on his primary calling of teaching economics. He occupies a chair at Yale, it is true, but his class-room is really the nation and the world, for thinking men everywhere are his pupils. He has written numerous books, some on mathematics but chiefly on political science. His latest contribution to the sum of human knowledge is a plan for stabilizing values by changing the weight of the gold dollar as prices of other commodities fluctuate. This would, if successfully carried out, end for all time that phenomenon which under the name of the high cost of living, is today the greatest disturber of the world's industries and politics.

### Sir Horace Plunkett

Another soldier for the common good who is known to readers of this magazine is Sir Horace Plunkett. He, too, went through an early storm and stress period of physical disability. At the age of twenty-five he left Ireland to seek new vigor in our West. That was in 1879. He remained ten years and acquired large ranching interests in Montana. These he retains and usually visits each year. Sir Horace was uncommonly fortunate in that his sojourn in the West brought him not only better health but financial advantage as well. It did much more—it gave him an experience in agriculture which was to prove of inestimable benefit to his native land.

In 1894 he founded the Irish Agricultural Organization Society, which introduced cooperation among Irish farmers and proved the value of efficient methods. When, largely through his efforts, a Department of Agriculture and Technical Education was established for Ireland in 1899, he was made vice-president of it and was placed in practical control. The present prosperity of Ireland is largely due to him, and we have high English authority for saying that he has probably done more for his country than any other man of his generation.

### John D. Rockefeller

Perhaps the most talked-of case of bodily infirmity in the United States has been that of Mr. John D. Rockefeller. As the man who has amassed the largest fortune ever acquired in industrial pursuits, and also as the greatest philanthropist, in terms of money, that the world has ever known, he is naturally the subject of endless talk and comment. Every one who reads the newspapers has seen references to that poor stomach of his. Indeed, the statement is often made that "John D. Rockefeller would give a million dollars for a new stomach." In truth, his ailment has by contrast, brought cheer to thousands. A lover of the so-called good things of life sits down to a board laden with delicacies, solid and liquid, and declares that he wouldn't trade his digestion for "all of old Rockefeller's money."

It is true that the Oil King's diet has been for nearly half a century of the most simple and meager sort, but it is open to question whether he is so terribly unfortunate in this. If these things could be measured, perhaps the best meal you ever ate was not the most elaborate and expensive, but a simple repast in the woods, where the open air and the tramping or rowing had given you a superb appetite. Hunger is, after all, the best sauce. Mr. Rockefeller lives an outdoor life and plays a lot of golf. It is possible that he sits at table with no feeling of envy for those whose prandial pleasure arises less from their own exertions than from the skill of their cooks. At any rate, he has lived to hear of the death of many of his contemporaries, men who perhaps pitied him for his poor digestion as they raised their knives and forks over savory servings of rich foods.

It was in his early thirties that Mr. Rockefeller brought on himself this disability which was to mean so much to the earth's inhabitants, now and in the years to come. He was organizing the Standard Oil Company, and threw himself into his tasks so vehemently that his digestion was "ruined," as the popular phrase has it. Of course he sought the best medical advice. What was more important, he carried out faithfully the measures which he knew would be helpful. In spite of his handicap, he built up a great series of industries. It is true that he formally retired from business in 1911, but today, at eighty-one, he still retains the mastery of his affairs.

What signifies most about all this is that his own misfortune led him, like Professor Fisher, to give much thought to the subject of health, and many of his millions have been lavished on the improvement of medical science. His gifts to schools and colleges have really aided in this crusade, for Education is ever the handmaiden of Health. His generous endowment of the Rockefeller Institute for Medical Research has strengthened the means and methods of combating disease. A comprehensive scheme for bettering medical education not only in the United States and Canada, but also in South America and China, has been put into effect by his poured-out treasure. In the great war, numberless destitute and sick were cared for through agencies due to him, and at home and abroad, tens of thousands have been born to a new life through his campaigns against hookworm, tuberculosis and other plagues. It is a record which helps to make this an age of which mankind may well be proud. Who knows how different this story would have been if Mr. Rockefeller had always possessed one of those stomachs of which the owner boasts that it will digest rubber shoes and ten-penny nails?

### James W. Gerard

James W. Gerard, a candidate for the Democratic nomination for President this year, was forced to leave college by ill health. A stay in Colorado restored him to a vigor which later enabled him to cope with the myriad difficulties besetting his post as Minister to Germany before the United States entered the war.

### Luigi Cornaro

If we turn from the living to the dead, examples a plenty come to mind of invalids who turned their ill fortune into good. Conspicuous among these by reason of the great age which he attained was Luigi Cornaro, who was born in Venice twenty-eight years before Columbus discovered America. He was, as he himself tells, over fond of "the good things of life." In consequence, his health was so impaired that at the age of forty, his physicians warned him that unless he changed his manner of living, his end was only a matter of a few months. He suffered such pain that he had nothing to hope for, he says, except that death would terminate his troubles and the weariness of his life. But his medical advisers persisted that he might still prolong his days if he would adopt "the temperate and orderly life." The thought of dying at so early an age made him very sad, so he finally decided to try this new course. He gave up all his old excesses, ate and drank in moderation, and touched no food which by experience he knew to be hurtful to him. In a year he had recovered his health.

Unlike many another, he did not, when cured, go back to his old habits. He continued to practise abstention and maintained his health and strength to an extraordinary degree. So notable indeed was his experience that at the age of eighty-three, he was persuaded to give the world an account of it. He calls his treatise, "The Temperate Life," but it is translated under the title of "The Art of Living Long." His family and friends becoming distressed at the meagerness of his diet when he was seventy-eight, besought him to eat more heartily. As their urgings were seconded by his physicians, he yielded in so far that he increased his daily allowance of food from twelve to fourteen ounces. A severe illness set in, marked by a fever which lasted thirty-five days. After his recovery, he allowed no persuasions to interfere with the regimen which had proved so satisfactory.

At the age of eighty-six, he wrote a second discourse, pleading for the practice of those habits which had saved his life and made it so fruitful and happy. Again, at ninety-one, he published an addendum in the same strain, declaring that "the more my years multiply, the more my strength increases." He was visited by a number of the professors from the University, who found his memory, mind, heart—even his voice and teeth—in perfect condition. He wrote eight hours a day with his own hand, chiefly on architectural and agricultural subjects. His final exhortation to his fellow-men on moderation was written at the age of ninety-five.

Cornaro's book is not simply a treatise on health; it is a beautifully written philosophy of life. He did not merely lengthen his work; he broadened and deepened them. He took pleasure in the contemplation of Nature; his perfect health reacted in a contentment of mind that made him superior to the ordinary misfortunes of life. Certain highly important lawsuits were brought against him by men of power and position. His brother and other relatives, who had not adopted his mode of living, were excessively worried for him. He, on the contrary, was distressed not at all. "I tried to believe, "he writes, "that God had permitted these law suits to be brought against me in order that my own strength and courage might better be made known, and that I should win them to my own advantage and honor, as in fact I eventually did, gaining a glorious and profitable victory."

In his last treatise, he tells with tranquility of the loss of a considerable part of his income through misfortunes of his grandchildren.

"It is another source of happiness to me," he goes on," that merely through the activity of my thoughts, which do not sleep, without any bodily fatigue and with but a little labor of the mind, I found a sure and unerring way of repairing—yea, of doubly remedying—that loss by means of true and scientific farming."

Old age he found "the most beautiful period of life." He died in Padua at the age of one hundred and three.

### Thomas A. Edison

Two hundred years ago, in *The Spectator*, Addison wrote approvingly of Cornaro's book. The great-grandfather of Thomas A. Edison came upon the treatise and adopted its teachings. He lived to be one hundred and two. His son, grandfather of the inventor, likewise practiced the abstemious diet of Cornaro, and reached the age of one hundred and three. All of his seven sons followed these ideas, and all of them lived to be over ninety. Mr. Edison has himself profited by the family traditions and maintains remarkable health in the face of overwhelming labors.

The book is an inspiration, not only for its lessons on frugality and self-control, but for its wholesome, uplifting spirit. Having been translated into many languages, it has helped sufferers throughout the world in their struggles against disease. Mr. John H. Patterson, who has done so much to make life more beautiful and healthful, not only in his great factory at Dayton, Ohio, but in the city and in the country at large, has found in Cornaro an adviser and a friend. Having come upon a superb and comprehensive edition of "The Art of Living Long," he has given away hundreds of copies of it, marking the pages which have been of greatest value to himself.

### Galen

Cornaro mentions Galen, the famous physician, as asserting that "all other disorders caused him but very little harm, because he had learned to guard against those of excessive eating and drinking; and that for this reason he was never indisposed for more than a day." Galen was born with a very delicate constitution, but thanks to his habit of never fully satisfying his appetite, he lived to a ripe old age, probably eighty-nine. He was born in 130 A. D. and became the physician of four of the Roman emperors, including the famous Marcus Aurelius. He was a tremendous worker, for besides practicing his profession, he wrote voluminously not only on medicine but also on logic, ethics and philosophy. For thirteen hundred years he was the recognized authority on medical science.

### Cicero

To go back a little farther, the eloquent Cicero accomplished great tasks not only in public life, but as a writer, in spite of the handicap of bodily frailty. Plutarch, in a paragraph, tells the story: "He rarely, if at any time, sat down to meat till sunset, and that not so much on account of business as for his health and the weakness of his stomach. He was otherwise in the care of his body nice and delicate, appointing for himself, for example, a set number of walks and rubbings. And after this manner of managing the habit of his body, he brought it in time to be healthful and capable of supporting many great fatigues and trials."

Cicero at one time had to leave Rome to travel two years in the East on account of his health. He left a large body of writings, rhetorical, oratorical, philosophical and epistolary. His untimely death at the age of sixty-one was due to murder.

### Sir Francis Bacon

One of the great men who was influenced by Cornaro's book was Sir Francis Bacon, who was born three and a half centuries ago. He, too, is to be included in our list of those who in spite of the limitations of bodily infirmity, performed large works and lived to a good old age. Like most of these others, he was interested in teaching his fellow human beings the lessons he had learned from his own ill-health. In his "History of Life and Death," he prescribes a regimen for long life. He speaks of exercise and cheerfulness, but lays the greatest stress on food. "Diet," he declares, "well ordered, bears the greatest part in the prolongation of life." As a boy, apparently he was such a weakling that he did not go to school, receiving his education from tutors. His health was always extremely delicate, yet he led a very productive life as a lawyer, judge, politician, and, above all, as a writer. His essays are still part of the reading of people of culture; his volumes upon volumes on scientific and philosophical subjects made him a great leader in the reformation of modern intellectual processes. His death occurred at the age of sixty-five, from his ardor for knowledge. While out driving, it struck him to try an experiment with the preservative power of snow. He stopped at a cottage, bought a fowl and aided in stuffing it with snow. The exposure brought on a severe chill, which ended in his fatal illness.

*(To be continued)*

## Save the California Redwoods

"It took more than 3,000 years to make some of the oldest of the Sequoias, trees that are still standing in perfect strength and beauty, waving and singing in the mighty forests of the Sierra."

So speaks John Muir in an hitherto unpublished writings found among the late naturalist's papers by Dr. William F. Bade, his literary executor, and now reprinted by the Save the Redwoods League.

"Through all the eventful centuries since Christ's time, and long before that, God has cared for these trees," says John Muir, "saved them from drought, disease, avalanches, and a thousand storms; but he cannot save them from sawmills and fools; this is left to the American people."

Muir's article is particularly timely in view of the concerted effort being made to save the best representative tracts of Sequoia sempervirens, or Redwood, in Humboldt, Mendocino and Del Norte counties. Muir was a lover and admirer of the massive Sequoia gigantea of the Sierras, large tracts of which have been preserved by the Federal government. He was an equal admirer of the Sequoia sempervirens of the California coast, at present almost entirely in private hands and threatened with ultimate destruction through lumbering operations.

Muir advocated a National Park of Sequoia sempervirens: "While the iron of public sentiment is hot, let us strike hard. In particular, a reservation or national park of the only other species of Sequoia, the sempervirens, or Redwood, hardly less wonderful than the gigantea, should be quickly secured. It will have to be acquired by gift or purchase, for the Government has sold every section of the entire Redwood belt from the Oregon boundary to below Santa Cruz."

# Crushing Tuberculosis by Curing the Child

Pasteur declared it was within the power of mankind eventually to eliminate all disease caused by a germ.

Modern medical investigation has shown that it is possible to eradicate tuberculosis from the face of the earth, providing we start with the child.

Tubercular infection is received in early childhood, but as a rule does not develop until years later, according to Miss Mary Marshall, of the National Tuberculosis Association, who addressed a Conference of Red Cross Public Health nurses recently. The audience hailed from the States of New York, New Jersey and Connecticut, and the sessions were held at Mrs. Whitelaw Reid's residence in New York City.

"People in mature life seldom take tuberculosis," said Miss Marshall. "Children become infected either by drinking milk from tubercular cows or by direct contact with human tuberculosis cases. General Public Health work is reducing the amount of tuberculosis in this country by building up better health habits among the people.

"For every death from tuberculosis there are ten other active and ten inactive cases in the community.

"Sixty-nine thousand men were rejected by draft examiners in this country during the war because they had tuberculosis. Twenty-two thousand more that the draft boards had overlooked were dismissed for tuberculosis after they got into the army. Fifteen thousand cases developed during actual military service.

"The number of tubercular men of draft age seems appalling enough, for if there had been an examination of women in the same age group, the figures would have been just as great.

"Every year tuberculosis takes a toll of 10,000 lives in this country."

Since insufficient nourishment is a predisposing cause of tuberculosis, the Red Cross is making a vigorous fight to arrest the march of the disease by reducing the surprising amount of malnutrition. Correct nourishment for American families through well-balanced meals and properly cooked food is the chief aim of the Red Cross Bureau of Dietetics. An outgrowth of this work has been the Nutrition Centers for children where malnourished little ones are actually fed and carefully instructed in the kind and the amount of food they should eat at home. Careful records of their

Milk is the principal article of diet for the Schenectady children. They have it twice a day, besides at the noonday meal, which consists wholly of dishes prepared with milk.

progress are kept at the Center and weekly awards given for gains in physical vigor.

Open-air schools, supported or assisted by the Red Cross, have been responsible for startling health gains in the children, and have proved conclusively that tuberculosis can be definitely driven out of the system, if only the blow be struck in time.

If you loitered in the neighborhood of the Red Cross Nutrition Center in the Bronx, New York City, on a sunny afternoon when the windows were open, you might catch the echo of a popular refrain:

"There are foods that make us healthy,
There are foods that make us strong."

and so on to the end of the stanza modelled on the familiar "Smiles."

"But the best food of all is milk"—here the childish voices end the song in a health moral. For health is the topic of almost all that is sung or recited or played in the Nutrition Center, where some two hundred children are weighed and charted by the Red Cross Nutrition expert each week.

Along with tabulating what scales and tape-line show from week to week as to Johnny's or Mary's gain in physical fitness, the Nutrition worker disseminates much valuable health propaganda in the form of fairy tales, games and songs. Then, too, there is the moral stimulus of knowing that Mary Mulligan lost half a pound during the week because she neglected to drink her milk regularly, and that Tony gained extra weight by going to bed an hour earlier each night. These revelations are not lost on the members of the class, who immediately plan changes in their own mode of living in order to capture the elusive Blue Star. This trophy, placed opposite a child's name, marks that youngster as the week's champion in weight-building.

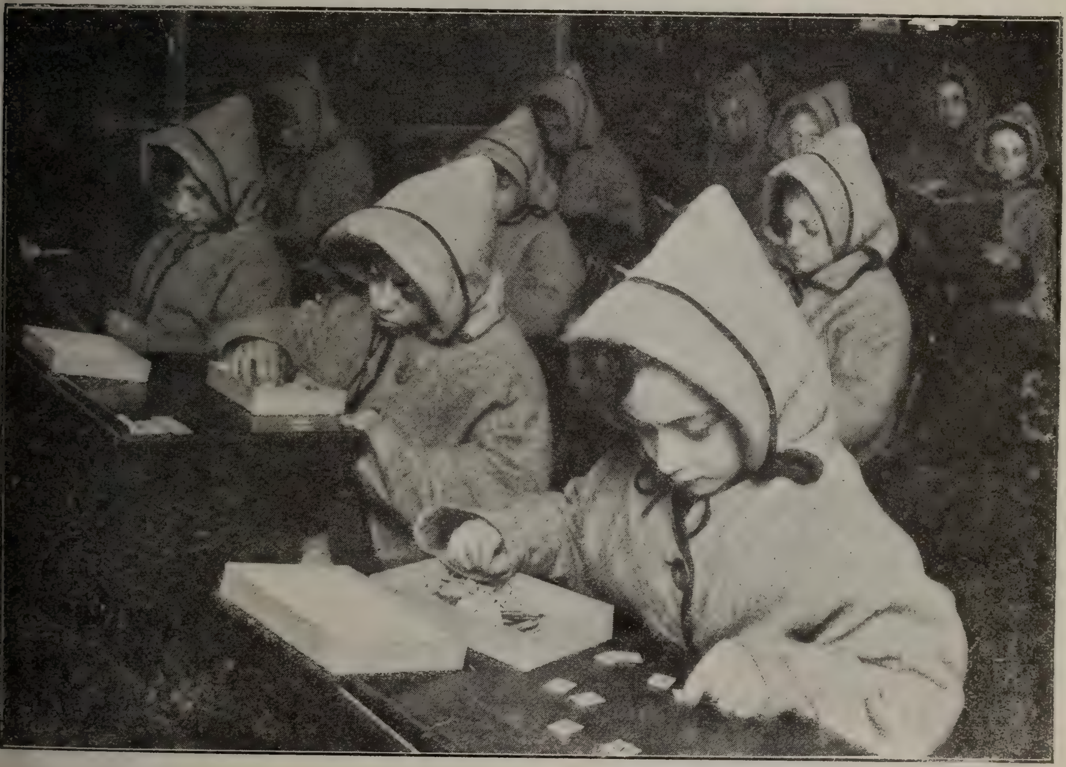
For the children in the Red Cross Nutrition class are all undernourished—or were when the Red Cross selected them for its clients. Weight insufficient to correspond with height, dull-colored mucous membrane, unusual inactivity or nervousness are symptoms which the examiner is quick to detect.

Here is the way Mrs. Gertrude Gates Mudge, in charge of the Red Cross Brooklyn Nutrition Center, collected her small patrons. First, from a public school she brought a number of children that seemed to her to be mal-nourished. The examining doctor made diagnoses. Tonsils, adenoids, defective teeth, even mental ailments, come to light under the doctor's searchlight, and the children are sent to different clinics for treatment.

"Children examined will average four defects apiece," said Mrs. Mudge. "Before the nutrition program can make any real progress, the young patients must be put into a condition where their bodies will have a fighting chance to become strong and healthy. This is not possible where a chronic ailment is sapping more vitality than a correct feeding regime can build up. After enrollment at the Center, the youngsters report once a week after school hours for weighing, measuring and health talks."

"We appeal to the malnourished children through the imagination," said Mrs. Mary Richardson Nevins, in charge of the Bronx Center. "The work is done mostly through games and songs. Interesting health facts come to light during the weighing process. Then we discuss one type of food that will be valuable in gaining weight. Thorough mastication, care of the teeth or some other subject is taken up in connection with the food lesson, and the game or song helps fix the idea in the child's mind.

"Then if the lesson, for instance, is



Only children who seem susceptible to tuberculosis are accepted in this Open Air School at Plainfield, N. J. The schedule includes outdoor study and play, with milk feedings and hot lunches.

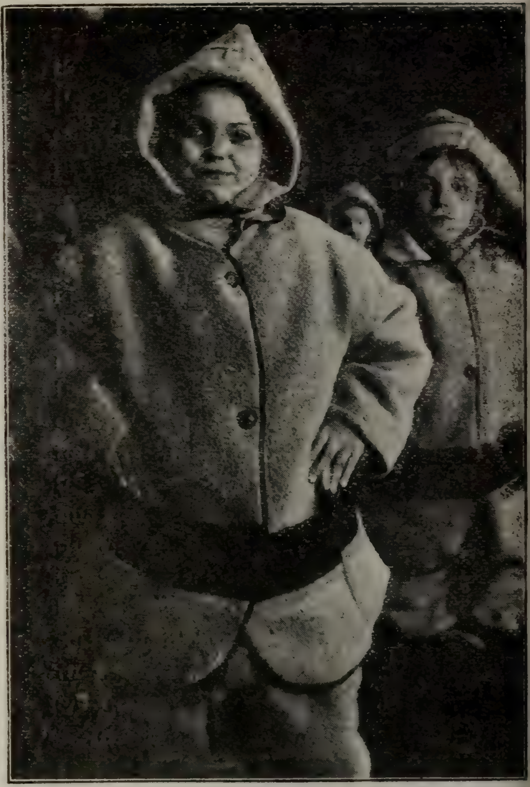
cocoa, we make a pot of cocoa on the gas burner and the youngsters watch all the steps. Then each child is given the recipe. Three-fourths of our children are now making cocoa for themselves at home, who formerly drank only tea and coffee. The recipe plan also introduces many simple, delicious milk concoctions into homes where milk heretofore had never figured in the diet, and the benefit to children and other members of the family is soon apparent. This is especially noticeable among Italian families, where milk often is totally disregarded, even in the feeding of small children."

Through Red Cross Public Health nurses hot school lunches are being introduced into many rural schools where the children formerly carried the burden of the day's fatigue on nothing but a cold sandwich at noon. These youngsters leave home at seven in the morning and do not return at noon. Although twenty-four per cent of children in large cities are mal-nourished, the figures mount when one goes into the rural schools.

Thirty-six per cent of country children suffer from malnutrition. These little folks are in a fine way to become tubercular, despite the outdoor life which farm children are supposed to enjoy.

Perhaps more interesting still, to the medical man, are the cures or near-cures effected in open-air schools. One of these, the Mohawkville School, at Schenectady, N. Y., accommodates twenty-eight pupils, all of them active tuberculosis cases. Most of them became tubercular through under-nourishment at home, although a few were born with a tendency to the disease. In four months the patients showed an average gain of two pounds . Every child gained something, and several gained four, five and six pounds.

These children were of legal school age, but excluded because of incipient tuberculosis. Punctuated by rest periods and feedings, their school day at the Preventorium becomes something more than a tiresome round of study hours and recitations.



In warm outdoor suits the children in the Preventorium School at Schenectady, N. Y., take their fresh air treatment.

Immediately upon reaching school in the morning, the children are given milk. Then a few lessons are studied or recited, with the windows open, followed by an hour's rest in cots outdoors on the porch. While in the open, the youngsters wear their hooded, outdoor suits, which were furnished jointly by the Junior Red Cross and the local Committee for the Prevention of Tuberculosis of the State Charities Aid Association.

A nourishing lunch is then served, consisting of some such foods as creamed chipped beef on toast, cocoa or milk, raisin or white bread and butter, and tapioca cream pudding. The predominance of milk characterizes all the menus . Each child receives as many helpings as he wants.

After lunch the pupils play for a time, then read on cots for fifteen minutes, and then sleep for an hour. The nurse comes to inspect them at this time, and the temperatures are taken every day. Another milk feeding—and their school day is over at 3:30. It has been a day of casual, unhurried activity, of little restraint, and yet of actual progress both physical and mental.

At home the fresh air regime does not altogether relax, for parents are urged to keep the windows open.

It is significant that many of these children do not come from what are commonly termed "poor" families. Tuberculosis from malnutrition is not infrequently found among the children of the moderately well-to-do, whose difficulty is not lack of money but parental ignorance of the laws of child health.

The Preventorium was founded in January, 1920, by the Board of Education of the city of Schenectady. The Junior Red Cross donated $1,000 toward equipment, and is expected to make further donations as needed; but most of the expense for maintenance is borne by the Board of Education.

The marvelous result of this brief experiment is that probably ninety per cent of these children, *active tuberculosis cases* when they came to the school, will never have tuberculosis in mature life. They are cured. Those who have watched these patients with careful, professional eyes, declare that the disease has been arrested because taken in time, and nothing but future unsanitary, unwholesome living conditions would be likely to cause a recurrence.

# Water Drinking

[The following article is an excerpt from the manuscript of a work by the author, entitled "The New Dietetics, What to Eat and How—A Guide to Scientific Feeding in Health and Disease."]

Water drinking as a curative measure is of very ancient origin. Hippocrates prescribed it as a remedy in fevers, and the drinking of cold water has been practiced among the Egyptians from the most ancient times in the treatments of fevers. Cold water drinking was used by Hahn in the treatment of fevers in Germany in the first half of the eighteenth century, fully sixty years before Priessnitz prescribed the internal use of water in such prodigious quantities at Graefenberg.

Todano, an Italian contemporary of Hahn, made his fever patients drink five pints of ice water every three hours. The patient was placed in a hammock, without covering, and the treatment was continued until perspiration occurred. This extraordinarily vigorous refrigerative treatment must have sometimes produced most undesirable results, and it is these excesses in the use of an efficient and valuable remedy which are doubtless to a great degree responsible for the slowness with which the merit of water drinking as a systematic procedure has acquired recognition and appreciation.

Sir John Chardin, a French traveler in Persia, relates how that in May, 1764, he was treated by a native Persian physician for a very grave intermittent or "fever of Bender." One of the most important measures to which he was subjected was the drinking of large quantities of water cooled with snow.

The free drinking of cold water is an efficient means of lowering the temperature. Drinking two or three pints of water at a temperature of 40°, within ten minutes, has caused a fall of temperature of one and one half to two degrees. This method, first empirically used by John Hancock nearly two centuries ago, has been employed by a number of observers, with interesting results, but its chief utility is as an accompaniment of other antipyretic measures. Water-drinking lowers the temperature not only by absorbing heat, but by diluting the blood, and thus promoting evaporation from the surface and exciting the kidneys to increased activity, thereby encouraging the elimination of the toxins to which the rise of temperature is due. A glass of cold water every hour is an excellent rule for fever patients when the febrile action has any considerable degree of intensity. Cantani considered water-drinking superior to all other means of reducing the temperature, and Beverly-Robinson, after an extended experience, highly recommends it, directing that the patient should swallow not less than six or seven quarts every twenty-four hours.

Currie recommended water drinking in the treatment of fever, as follows: "While the different modes of applying water to the surface are employed, it ought also to be poured into the stomach in large quantities when the patient's heat will permit drinking contain a smaller number of vomiting are no objection to this practice."

The importance of water to the vital economy must be recognized when we remember that the living organisms which compose the human body, as well as those of all other animals, are submerged in water.

Bernard, the great French physiologist, sagaciously remarked: "Life exists only in a liquid medium. It is only by certain artifices of construction that the organisms of man, as those of other animals, can live in the air; but all the active cells upon which their functions depend, live, without exception, like the infusoria, in an interior liquid medium."*

Water drinking is an internal bath; it dilutes the fluids of the body in which the cells and fibers are bathed; it purifies the body by diluting the medium in which it lives. By the free use of water the movements of the mass of liquid in which the living elements of the human body perform their work is quickened, and the stream of life runs clear and pure. Water is absorbed from the stomach very slowly. This takes place chiefly in the intestine. Absorption is stimulated, however, by the presence of $CO_2$. Distilled water charged with $CO_2$ is the best of all drinks as a beverage for use in connection with hydrotherapy. It is soothing to the stomach, and is rapidly absorbed; hence more readily quenches thirst. The presence of mineral salts of any kind lessens the rate of absorption. Schultz has shown that copious water drinking increases the proportion of water in the blood nearly six per cent; but Bocker has shown that this increase lasts only a short time, not more than fifteen to twenty minutes. Half an hour later the blood is thicker than before, and contains a smaller proportion of water than when water has been wholly withheld for twenty-four hours. Another effect noted by Bocker was that blood clots formed after copious water it; and the presence of the nausea and damaged corpuscles, which indicate their capacity to absorb oxygen by not turning red when exposed to the air,—an evidence of the great value of water drinking as a means of improving the quality of the blood through bettering its constituents as well as by elimination of waste matters through assisting their solution.

To the thinning of the blood which follows copious water drinking is due the remarkably increased activity of the kidneys, skin, and bowels which it produces. Examination of the urine shows not only that the quantity is increased by water drinking, but that the urea and other solid constituents are also increased. Fleming,* in his experiments for the purpose of determining the physiological effects of the Turkish bath, showed that the perspiration produced in profuse sweating after copious water drinking contains a larger per cent of the chloride of sodium than does the urine. An increase in the amount of urea and other nitrogenous principles (1.55 per cent) was also noted.

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* "Physiology of the Turkish Bath," Glasgow.

Baron Liebig showed long ago (and his observations have been many times confirmed) that water drinking powerfully influences metabolism, increasing both assimilation and disintegration, but especially the former.

Water is the medium by which nutritive material is conveyed to the tissues and waste matters carried out of the body. Thus it is evident that by increasing the amount of water introduced into the body, the movements of the vital fluids, the blood and lymph, may be accelerated almost at will. By the increase in the volume of blood, the blood pressure is raised, the heart movements become more energetic, and the functions of the glands and other forms of activity are increased. This is true of the secreting glands as well as of the kidneys and other excreting glandular organs. creased movement of blood through the lungs secures greater obsorption of oxygen, by which the various metabolic and catabolic processes are facilitated; retrograde metamorphosis is more completely accomplished; uric acid, urates, exalates, and other products of imperfect oxidation are diminished or made to disappear entirely; in short, the patient lives a more highly vitalized and functionally active life.

The effect upon the blood of copious water drinking suggests it as a valuable measure in cases of dropsy whether general or local in character, especially the latter. The increase in the specific gravity of the blood due to the rapid withdrawal of water by the kidneys and the skin, even to the extent of impoverishing the blood, prepares the way for the absorption of the dropsical fluid; and by a repetition of this measure from day to day most remarkable results may sometimes be obtained. Distilled water charged with carbonic acid gas should be employed, without the addition of sugar or any substance, unless it be fruit juices of some kind. The dose should be from one to two pints, and should be taken preferably before breakfast or an hour or so before dinner.

When it is desired to increase the volume of the blood and to introduce permanently a larger proportion of water, the water drinking should be managed in quite a different manner. A small quantity should be taken at frequent intervals, and the amount in the course of a day must sum up to several pints; but the quantity taken at any one time should not exceed four to six ounces. This quantity may be taken every hour or hour and a half with advantage.

When the amount of water supplied to the body is insufficient, the condition of the body becomes in some degree comparable to that of a stagnant pool; while an abundant supply of liquid so encourages its activities that it may not inaptly be compared to the flowing mountain stream.

Priessnitz required his patients to drink large quantities of water, sometimes as high as twenty to forty glasses a day. It is curious to note that at the time when this empiric was requiring his patients to swallow such prodigious quantities of water, he had a rival, an old schoolmate, by the name of Schrott, living in a little village four miles from Graefenberg, who required his patients to abstain wholly from water for five to eight days at a time.

Water is not a mere mechanical conveyor of poisons out and of food in; it is a powerful vital stimulant.

The deluging practice of Priessnitz is still recommended by the German water-cure empirics and by some scientific hydrotherapists, but cases are certainly very rare in which such quantities of cold water can be swallowed with advantage. As a measure of treatment, water drinking may be practiced to the extent of six or eight or even ten glasses a day with advantage, when required, but not infrequently three or four glasses are sufficient, and there are cases in which it is more important to interdict the use of liquids by the stomach than to commend their use. In such cases water may be introduced by the enema in small quantity, to be retained.

Cold water drinking is especially indicated in all the cachexias and diatheses. In rheumatism, it is useful as a means of diluting the blood so that it can dissolve and carry out of the body the large amount of broken-down material which results from the increase in tissue destruction set up by exercise, hot and cold baths, and other means employed to reduce weight. To forbid the free use of water in obesity is a grave error.

In diabetes, the free use of water is not injurious, but advantageous. The blood contains an excess of sugar. All the sugar that is not oxidized must be removed from the body by the kidneys. The specific gravity of the urine in these cases is always high, indicating a similarly high specific gravity of the blood. It is evident, then, that water is needed in cases of this sort for the purpose of maintaining a proper degree of fluidity of the blood and for facilitating the removal of the unused sugar, the presence of which interferes more or less seriously with the various vital functions.

Free water drinking is important in diabetes to aid in the elimination of acedone and diacetic acid, thus preventing acidosis. Free water drinking in cases of acidosis and diabetic coma is highly important.

While the free use of water in diabetes will, of course, have the effect to increase the quantity of urine daily discharged, the amount of sugar, which is a matter of most serious importance in this disease, is not increased. Indeed, the amount of sugar has appeared to be somewhat decreased, and sometimes greatly lessened, doubtless as the result of the increased oxidation which takes place within the body under the influence of free water drinking.

In fevers, water drinking is essential as a means of aiding the kidneys and the skin in the elimination of the toxins to which the rise of temperature is due, in aiding the liver in its work of destroying the fever poisons, oxidizing leucomains, and promoting the reduction of temperature by securing an increased evaporation from the skin.

Winternitz and numerous other observers have shown that when water is taken in sufficient quantities, the temperature of the body may be lowered by the absorption of heat from the water. Suppose, for example, a patient having a temperature of 102° F. should swallow three pints of water at 60° F. In acquiring the temperature of the body, the water swallowed will absorb 126 heat units. In the case of a patient weighing 120 pounds, this would induce a fall of temperature of more than 1° F, provided, of course, that the heat production and heat elimination continued at a uniform rate.

A general fall in the temperature of the body of .4° C., sometimes more, was observed after drinking freely of water at a temperature of 60° to 65°. Water taken at a lower temperature and in larger quantity has been shown by Winternitz to be capable of reducing the pulse twenty beats and the temperature .8° C. (1.4° F.). The temperature of the urine was found to be .7° C. (1.3° F.) below the normal.

In cases of chronic dilation of the stomach, water drinking, while indicated as a means of relieving the general condition, may be inadmissible on account of the state of the stomach. In these cases water may be introduced by the enema.

Copious water drinking is one of the most effective means of relieving a common cold, by aiding in the elimination of tissue poisons, the accumulation of which gives rise to the difficulty.

One or two glasses of cold water taken half an hour or an hour before breakfast will prove in many cases an almost perfect panacea for *chronic inactivity* of the *bowels.* At a meeting of the New York Academy of Medicine attended by the author more than forty years ago, a leading physician of New York City stated that he had successfully treated more than one hundred cases of constipation by this simple means.

Chronic biliousness, which is nothing more or less than chronic toxemia resulting from the putrefaction of animal food substances in the alimentary canal, requires the free use of water. Eight or ten glasses a day would be none too much in cases of this sort.

In cases of gall-stones and infectious jaundice, water drinking is certainly indicated. The amount taken should be ten or twelve glasses a day, if possible, so that the liver will be thoroughly flushed and the bile so diluted that it will be able to dissolve and remove any concretions which may be present. In *cirrhosis* of the *liver* arising from either indigestion or alcohol, water drinking is essential as a means of aiding the liver and the kidneys to perform the work required of them in the removal of a large quantity of alimentary poisons in addition to the toxins naturally produced within the body by the physiological processes of tissue change.

In the treatment of the opium, alcohol, tobacco and other drug habits, water drinking renders important service by hastening the elimination of the drug and in aiding liver work and general oxidation.

The temperature of the water drunk should ordinarily be about 70° F. In special cases water at 60° and even 50° may be employed. Very cold water is indicated only in fevers, in constipation, and in small quantities in hypopepsia.

The quantity of water taken must depend on the effect desired. In fevers, a good rule is to take a glass of water every hour. In hypopepsia, one third or one half a glassful of cold water may be taken half an hour before eating. For inactivity of the bowels, one or two glasses of cold water should be taken on retiring at night, and as much more on arising in the morning. A thirst for water is almost always an indication that it may be taken with advantage, no matter whether such use is in harmony with the established canons of hygiene or not. It is safer to trust to the natural instincts than to pin one's faith to a theory. Almost the only decided contraindication is in connection with meals, when free water drinking prevents proper insalivation of the food.

The purest water is universally the best. Water obtained from natural sources is generally more or less contaminated, that from lakes, streams, and rivers being necessarily defiled by the fish and other creatures which live in natural bodies of water, and by surface drainage, which, after every rain, washes out quantities of filth. Water obtained from uncertain sources should always be boiled; indeed, this precaution is a wise one under nearly all circumstances when traveling.

Hard water should always be boiled for a long time to eliminate, so far as possible, the lime which it contains.

## Department of Eugenics

Conducted by WILHELMINE E. KEY, Ph. D.

# The Biological Factors in Political Leadership

More and more we are coming to take account of the biological basis of our economic and political problems. Half a century ago, Herbert Spencer in his "Principles of Biology and of Sociology" gave an elaborate interpretation of human society in terms of biology. In this monumental work, we find the entire course of evolution from the most ancient cosmic changes to the latest effects of civilization traced as the expression of biological law. Since that time, these concepts in one form or another have found expression in the political and social philosophy of the day.

These concepts are coloring much of the post-war discussion of racial trends in their relation to world supremacy. To many it seems clear that the most serious effect of the war will be found in the weakening of white solidarity. This weakening of white solidarity, taken with the actual losses on the field of battle, and the toleration of conditions which continually slow down the white birth-rate, are facts which call for clear-sighted leadership, if the white peoples are not to be involved in a series of conflicts with the colored races which will wrest from the former the economic and political direction of world affairs.

### Genetic Factors in Leadership

In the face of such grave contingencies, it is of more than passing interest to inquire what have been the genetic factors that made for national leadership in the past. The man who is elected Chief Executive will of necessity play a considerable part in guiding national policies in the years just ahead. Are there sections of this country pre-eminently fitted to produce such leaders? In the present presidential campaign, three great parties have picked their candidates from the same State. Is this coincidence, political strategy, or are there more vital reasons for this preference?

In an earlier paper we discussed some of the social and physical factors which served to give a definite cast to the population of the thirteen colonies. We found this population to be drawn from some of the most virile stocks of the Old World; and it was in general the able, independence-loving representatives of those families who responded to the call of the new land. Once here, the adverse conditions encountered in the form of severe climate, disease, want, hardship and savage foe brought about a farther winnowing out. And thus it happened that those who survived to become the founders of American families had a rich endowment of abilities both physical and mental which they passed on to their descendants.

From the intermarriage of such stocks there arose those superior families that were fitted to lead in the formative period of the nation's history. In these families, by the fortunate crossing of able lines, there sprang from time to time those remarkable personalities whose genius is enduringly expressed in our institutions and traditions. It is purposed in this paper to inquire more particularly into the origins of the types of leaders that have been furnished to the nation in critical periods of our history.

### The "First Families of Virginia"

One other State shares with Ohio the distinction of being called "the Mother of Presidents." That State is Virginia. Many interesting comparisons suggest themselves, such as that between Virginia and Massachusetts regarding their contribution to our basic political ideas. The contribution of each was peculiar, and it may be of equal value. However, the limits of this paper make it imperative to confine our attention to Virginia.

In our analysis of family traits and tendencies, it is possible to trace a relationship between the type of development of a section and the leading characteristics of the families which early found a home there. As such a section emerges into wider influence, these tendencies take the form of social and political principles which seek to impress themselves on other sections of the country. There is thus engendered a conflict of ideas subsisting as a tenuous and subtle extension of the warring personalities that gave them voice. Striking examples of this process are found in a number of familes which conferred their particular types of leadership in the early days of her history.

Going back to colonial times, we come upon the figure of William Claiborne. He came of a family which for six hundred years had been more or less prominent in the warring, intriguing life of the Scottish Border. He was the most virile and aggressive representative of his line in his generation. In 1621 he was sent as Royal Surveyor to the colony at Jamestown. Here he became successively Captain, Colonel, Secretary and finally Parliamentary Secretary of Virginia. Of powerful, magnetic personality, resourceful and indomitable in his large designs, he, more than any other single person, largely shaped her history for half a century. Moreover, his children and grandchildren married into families of similar worth and tendency, and their descendants number many judges, military and civil leaders. Each of these, in the measure of his force of personality, gave character to the dominating political ideas of Virginia.

Then there was the remarkable galaxy that arose from the intermarriage of members of several aristocratic families, which gave to the colony and State such leaders as the Lees, the Custises, the Fitzhughs and the Randolphs. Through the Randolphs, their blood was infused into the makeup of Washington and Jefferson. The story of their origins, quoted from Davenport's Heredity and Eugenics is as follows: Richard Lee, of a Shropshire family that held much land and many of whose members had been knighted, went, during the reign of Charles I, to the Colony of Virginia as Secretary and one of the King's Privy Council. "He was a man of good stature, comely visage, enterprising genius, sound head, vigorous spirit and generous nature." He gained large grants of land in Virginia. His son Richard married Laetitia, daughter of Henry Corbin and Alice Eltonhead. The Corbins were wealthy and extensive landowners in England for fourteen generations, and the Eltonheads were also an aristocratic family and large landowners of Virginia, holding high offices in the colony. Richard and Laetitia had six sons and one daughter. Their daughter Ann married Colonel William Fitzhugh, a descendant of the English barons of that name who took prominent parts in the political and military movements of the day and occupied seats in Parliament generation after generation.

Their eldest son, Henry Fitzhugh, married Lucy Carter. One of their granddaughters married a Randolph; one of their sons, William Fitzhugh, a near neighbor and trusted friend of Washington, married Anne Randolph. Their daughter Anne married Judge William Craik; their daughter Mary married George Washington Parke Custis and became the mother of Mary Anne Randolph Custis and the grandmother of Robert E. Lee.

Thomas Lee, another son of Richard and Laetitia, was a member of the House of Burgesses and later Acting Governor of the Colony. He married Hannah, daughter of Colonel Philip Ludwell, a descendant of a brother of Lord Cattington, a prominent diplomat and statesman of the reign of Charles II. One of the sons of Thomas and Hannah was Richard Henry Lee, a representative to the Continental Congress, who prepared the resolutions for independence; and another son was Francis Lightfoot Lee, a member of Congress; still another, Thomas, was a judge of the General Court.

The foregoing is a small sample of the intermarriages of the first families of the Old Dominion which gave to the nation, statesmen and military men, leaders in council and in action through the critical early period of American nationality. In addition to the men already named the State gave many other influential sons, most of whom trace their derivation from the same superior stock. It gave the chief who led the Revolutionary army to victory. It gave Thomas Jefferson, to write the Declaration of Independence, after Richard Henry Lee had made the motion in favor of independence. It gave the Virginia plan to the convention that formed the Constitution of the United States, with ardent supporters thereof in the person of George Washington, James Madison and Edmund Randolph. It gave four of the first five presidents of the United States; and finally it gave that outstanding personality, John Marshall, who as head of the national Judiciary, with courage and clearness enunciated the fundamental principles of our Constitution as applied to the complex problems of a national government.

### The "Presidential Timber" of Ohio

There are no accidents in history. It was no mere accident that so many of the leaders in the early national movement should have come from one comparatively small section of the country. Neither is it any accident that in recent years another section of the country has furnished a disproportionate number of political leaders. Ohio's proud distinction of furnishing three presidential candidates in the present political campaign is susceptible of interesting analysis from the standpoint of human genetics.

In the minds of many the situation is sufficiently accounted for by the strategic position occupied by the State in national politics. As long ago as 1880 it stood third in population among all the States. It is a doubtful State, which makes the selection of one of its sons by a party a distinct advantage to that party. Granting all this, there are still other reasons for the phenomenal production of "political timber" found here. What are the facts concerning this "timber," and what are some of the eugenic reasons for its unusual output?

Reviewing our United States history, we find that fourteen times in twenty-one national campaigns, a "son of Ohio" has been nominated a candidate for the presidency. Six times in thirteen campaigns, vice-presidential candidates have been chosen from the same state. Seven of the fourteen candidates became President. They were:

1. William Henry Harrison, who came from Virginia as a pioneer, carved his farm out of the Ohio wilderness, serving the State as a soldier in several wars, and taking valiant part in its early political conflicts. His family for generations had a prominent part in the public life of Vir-

ginia . His father was elected to the House of Burgesses, where he opposed the Stamp Act; he also was a member of the committee which devised the militia system adopted during the Revolutionary War. As Speaker of the House of Burgesses, signer of the Declaration of Independence and member of the Continental Congress, he played a conspicuous part in determining the political organization of the young republic. William Henry Harrison married Anne Symmes, daughter of the founder of the Miami settlement in Ohio. Benjamin Harrison, twenty-third president, was their grandson.

2. The second Ohioan to become President was Ulysses S. Grant. He was born of pioneer stock at Point Pleasant, O., April, 1822, the same year that a certain child, Charles Harding, made the perilous journey into the Ohio wilderness. Grant was of New England ancestry and belonged to the noteworthy network descended from Elizabeth Tuttle, who with Richard Edwards, founded the Jonathan Edwards family. Matthew Grant settled in Dorchester, Mass., about 1630. Two of the name bore arms in the French and Indian Wars. Grant's grandfather was one of those Revolutionary soldiers whom the fever for western emigration seized, so that he penetrated the Ohio wilderness to Columbiana County.

3. In October, 1822, there was born in the little hamlet of Delaware, another pioneer baby, christened Rutherford Birchard Hayes, who was destined to succeed U. S. Grant as President of the United States. All three of his names stand for civic worth in the annals of New England. The first Hayes was a captain and a blacksmith, and settled at Windsor, Conn., prior to 1680. Henry Rutherford was one of the founders of New Haven, while Thomas Birchard settled at Saybrock, which he represented in the General Court in 1650 and 1651.

4. James A. Garfield was likewise a son of the then "western border." He was of worthy New England ancestry on the side of both father and mother. The latter was Eliza Ballou, who dowered her son with many of the excellences characteristic of her family. Some of these excellences were great industry, persuasiveness, steadiness of purpose, and a keen insight and sympathy with human need.

5. We have Benjamin Harrison, whose family has already been considered in connection with his grandfather, William Henry Harrison.

6. The sixth Ohioan to become President was William McKinley, likewise of pioneer stock, his grandfather having emigrated from Pennsylvania and established iron foundries at Niles and New Lisbon, O.

7. William H. Taft, in his career, has but continued the traditions of his family. His father, who emigrated from Vermont in 1839, soon became a political power in the Western Reserve. He had a long public career as educator, secretary of war, attorney-general and minister to various countries. The family dates back to the early settlers of Massachusetts, where we find one of its founders acting for thirty-five years as secretary of the Province.

Enough has been said in these bare outlines of ancestry to indicate its dominant character. These men and the people from whom they sprang became what they were because of ancestral influences acting and reacting through certain extraneous conditions, such as geographical position and the wealth of natural resources which the region presented.

To the people surging westward after the Revolutionary War, this region presented features calculated to make it a veritable land of promise. Here was a happy intermingling of rivers, valleys and uplands, with a soil generally fertile and largely covered with forests and open woodlands. On this land incomparably rich in possibilities, there settled some of the finest and sturdiest offshoots of the old colonial families. They numbered among themselves many Revolutionary officers. Men and women, they were of strong bodies and firm convictions, and of a practical hardihood which did not hesitate at energetic action when it came to incorporating their ideals into political measures.

From the intercrossing of these sturdy, thrifty, progressive offshoots there has arisen a race with the gift of leadership in this eminently practical age. Compounded of vast physical and moral energy, with political traditions derived from the spirit that made the Declaration of Independence and the ideas basic in the Constitution, it is no wonder that this region has so many times furnished the men called for by the peculiar public crisis.

The types of leadership of these public men have been by no means the same. It would require closer analysis than the limits of this article allow to show how these have been determined by the dominating pioneer traits in relation to family characteristics acting through the particular medium offered by the times.

What is true of the men just considered may be affirmed of the two nominees between whom rests our choice of Chief Executive for the next four years. Both are sprung from pioneer families who came to Ohio with the hundreds that crossed the mountains a century ago. Both are products of the forces, in their last analysis biological, that have been at work here during a hundred years and before that in the mother States of the Union. These men exhibit alike the fearlessness, the drive, the resolution characteristic of the pioneer. Both are intensely democratic. Both have an immense capacity for ideas and belief in the possibilities of the American people. But Cox, the blunt man of action, carrying through his measures for the masses so largely by sheer force of will, stands in some ways opposed in tendency to Harding, with his disposition to get along with people, to sense the striving of the majority, and so work with it toward a common purpose and united effort. Because of such differences, they have become the standard-bearers of opposing tendencies in political action. To trace the appeal of each in relation to predominating trends in American thought, would take us too far afield. We have merely tried to indicate here the way in which political trends in our history have been biologically determined,—through the interaction of hereditary factors with the physical and social environment.

# Race and Family in the Transmission of Cancer

The role of heredity in the occurrence of this disease has been widely debated. Opinions range from the positive denial that heredity plays any part in its occurrence to the asseveration that heredity is the chief predisposing factor.

Plainly the answer to this question is to be sought in the careful analysis of particular families with reference to their resistance to the disease. Such studies have been made, not only in the human family, but in the laboratory with large series of animals. In weighing this evidence, it should be remembered that "cancer" covers a wide range of manifestations in which exogenous factors have variable weight.

It seems probable that the stimulus to cancer growth is due to inoculation either with a germ or a ferment. As in the case of other maladies, the kind and degree of reaction to this inoculation is bound up with "the personal equation." It depends on individual metabolic changes which in their turn may have an hereditary basis.

Thus it has been shown that there are certain strains of mice in which cancer will not develop even after repeated inoculation. Other strains readily acquire cancer upon inoculation. Apparently we have here an inherited resistance to at least certain forms of this disease comparable to the resistance to tuberculosis observed in some races and strains of the human family. So far as cancer has been found to "run in families," the predisposition often shows itself as liability to a particular form of the disease. Thus in one family, non-resistance shows itself in cancer of the breast, in another, in cancer of the intestine.

The heritability of a form of benign tumor known as multiple neurofibromatosis was investigated by Davenport and Prieser. This is a relatively rare disease, it being found in only about 1 in 2,000 cases that present themselves to medical clinics or private practitioners for skin diseases. Despite this rarity, there are many cases in the literature describing 2 to 6 members of the same family, blood relatives, similarly affected. Its frequent recurrence in successive generations gives grounds for the belief that the hereditary factor involved in its appearance behaves as a dominant. Their general conclusion is that not only is there a general tendency to multiple tumors in certain families, but also a tendency to produce them of the same type and in the same places.

Maud Slye, working in the Cancer Laboratory of the Sprague Memorial Institute of Chicago, has also reported the inheritance of spontaneous tumors in mice. By careful analysis of the effects of interbreeding, she became acquainted with the intrinsic character of individual mice and of many different strains of mice. By inbreeding of hybrid stocks, she was able to segregate out the cancer tendency from the non-cancer tendency. One strain, for example, showed two branches, both rigidly inbred. In Branch I, she found she had an extraction of a non-cancer line, whose members, "neither in inbreeding nor in hybridization ever produced cancerous offspring." Branch II, on the other hand, yielded over 60 per cent. of cancer and sarcoma, and carried both of these types of neoplasms into every strain into which they were introduced. Her conclusion is that strains consistently inbred may produce 100, 50 or 0 per cent of cancer, according to how much cancer is bred in. The real effect of inbreeding is to eliminate cancer by eliminating the strain. Cancer in her material behaves as a recessive.

While many physicians take the view that to admit the heritability of cancer is to invite a hopeless attitude toward it, experimental workers find in their results increased hope for its ultimate eradication. Thus the writer just quoted goes on to say: "It is possible to eliminate cancer from the race by not putting it in through the ancestry; this is true, both in inbreeding and hybridization. In demonstrating the heritability of cancer and other tumor types in mice, we have demonstrated the heritability also for man and for every other species in which they occur, since cancer and non-cancer tendencies which segregate out in mice must also segregate out in every species in which they occur."

# Department of Physical Education

# The Physiological Age—Its Significance

C. WARD CRAMPTON, M. D.

We are beginning a complete readjustment in our methods of caring for children in medical, social, and scholastic ways, and we have consciously begun this revolution by assuming a critical attitude toward our general practice of classifying all children on a basis of chronological age—the number of years which they have lived. The readjustment, when complete, will provide a new basis for record, investigation, and treatment of all kinds, and this basis will be the physiological age.

The doctrine of physiological age affirms the fact that mental and physical development of children, adolescents, and adults proceeds through easily recognizable and discrete stages, and maintains that all classification and grouping of the growing and developing human being should take cognizance of, and relate themselves primarily to, these stages; and, secondarily, and in a decidedly minor way, to the artificial groupings upon the basis of the school grade or chronological age.

This doctrine is based upon a careful but as yet incomplete survey of developmental stages, and a search for easily recognizable signs which accompany each stage. The developmental signs may be anatomical, such as the appearance of the six-year molar, the wisdom tooth, or pubic hair; physiological, such as menstruation, change of voice, menopause; or psychological, such as of rote to associative memory, the wane of the collecting tendency, the budding of the earning instinct; and, later, the characteristic rumination of senescence. In short we have sought to ascertain by extended and intensive investigation what the significant stages of change may be and to discover easily recognizable signs whereby we may, from observation, denominate a child or adult to be in this or that stage, so that we might place him in classes of individuals of the same stage of development, for the purpose of adjusting and standardizing our medical, scholastic, and social treatment to natural instead of artificial requirements.

### Development Periods

Intra-uterine growth is extremely rapid; after birth, it is followed by a rapidly decreasing rate of growth and development, until, at the age of two or three, the child begins to grow at a slowly increasing rate, until a plateau of almost no growth and development is reached at about the chronological age of seven or eight. The static condition is maintained until there has commenced the great pubertal age. At this time, the most important epoch of adult life, second only in significance to the event of birth, the child commences a period which can only be likened to an explosion of growth and development. He has begun to grow tall with great rapidity; weight is added pound by pound, and with the increased bulk, comes a rapid addition to the muscle, strength, and motor ability. This age is most prone to begin during the warm months of the summer; and when it does occur, a single month may add an inch in height, 20 pounds in weight, and double the muscle force. After a variable length of time, a year, or a year and a half, the increase in height, weight, and strength gradually returns to a slow rate, and the body and mind proceed with a stage of ripening which we call adolescence. The following normal boy illustrates a rapid change from prepubescence (noted as stage 1) to postpubesence (noted as stage 3) occurring in the summer between 14 years 8 months and 15 years and 3 months. The actual weight, height and strength of grip at 13 years 8 months is given on the first line in Table I which notes only increments.

Referring to the whole progress from birth to maturity, we can catalogue the appearance of each new added structure, function, and mental ability, the whole forming a complete series from start to finish. Nor need we end our catalogue with maturity, for even on this high plateau appear new physical features and mental traits which determine important epochs in human life; even after this, the downward slope of existence shows salient points, such as menopause, canites, and tissue hardening, which mark physiological stages of exceeding definiteness and importance.

In this catalogue of events, physiological and mental growth do not proceed in an orderly fashion year by year. Some may be hurried, others retarded. Individuals rush past others for a time, and then lag behind others of steadier growth.

### Table I

(A. J. F., height, 148 pounds; weight, 41.7 pounds; strength 32.)

| | Stage 1 | | | Stage 3 | |
|---|---|---|---|---|---|
| | 13 years 8 months | 14 years 3 months | 14 years 8 months | 15 years 3 months | 15 years 8 months |
| Increase in height—centimeters | | 2.0 | 1.7 | 5.4 | 4.5 |
| Increase in weight—kilograms | | .9 | .9 | 4.5 | 5.3 |
| Increase in strength—kilograms | | 2.0 | 1.0 | 9.0 | 5.0 |

### Table II

| Weight (in kilos). | Age | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 14.25 years | | | 14.75 years | | | 15.25 years | | | 15.75 years | | |
| | Stage 1. | Stage 2. | Stage 3. | Stage 1. | Stage 2. | Stage 3. | Stage 1. | Stage 2. | Stage 3. | Stage 1. | Stage 2. | Stage 3. |
| 20-24 | | | | | | | | | | | | |
| 25-29 | 17 | 5 | | 6 | 3 | | 1 | 1 | 3 | 1 | 1 | 1 |
| 30-34 | 54 | 25 | 8 | 25 | 26 | 8 | 11 | 17 | 9 | 8 | 6 | 4 |
| 35-39 | 46 | 59 | 44 | 40 | 53 | 46 | 22 | 45 | 32 | 7 | 11 | 22 |
| 40-44 | 22 | 27 | 68 | 11 | 29 | 62 | 7 | 18 | 65 | 2 | 7 | 55 |
| 45-49 | | 13 | 52 | 2 | 9 | 76 | 5 | 6 | 70 | 1 | 9 | 78 |
| 50-54 | | 2 | 27 | 3 | 3 | 57 | | 4 | 61 | 1 | 2 | 62 |
| 55-59 | | | 13 | | 1 | 19 | | | 31 | | | 40 |
| 60-64 | | | 6 | | | 6 | | | 13 | | 1 | 14 |
| 65-69 | | 1 | 3 | | 1 | 4 | | | 3 | | | 2 |
| 70-74 | | | | | | 4 | | | | | | 4 |
| 75-79 | | | 1 | | | 2 | | | 1 | | | |
| 80-84 | | | | | | | | | | | | |
| 85-89 | | | | | | | | | | | | 1 |
| Total number | 139 | 132 | 222 | 87 | 125 | 284 | 46 | 91 | 288 | 20 | 37 | 283 |
| Average | 35.13 | 38.63 | 45.45 | 36.76 | 38.86 | 47.21 | 37.93 | 38.76 | 47.70 | 36.75 | 41.29 | 49.31 |
| Sigma | 4.49 | 5.67 | 7.47 | 5.17 | 5.88 | 8.07 | 4.75 | 5.06 | 7.81 | 5.76 | 7.11 | 7.78 |

We can not tell, from the number of years which the individual has lived, what stage of development he may be in. The calendar and the chronological age based upon it do not give us trustworthy information; and, strange to contemplate, the general error of science, medicine, and education is a blind adherence to a chronological age.

To illustrate the fact that important measurable differences exist between boys of the same chronological age who differ only in epoch of development Table II of weight by half years and stage of pubescence is given.
(Prepubescence 1, pubescence 2, postpubescence 3,). From this table, it is apparent that postpubescence is 10 kilograms heavier than the prepubescents of the same age. The differences are most marked and striking. In one age group (14.25) 102 postpubescents out of 222 are heavier than the heaviest prepubescents of the same age, a fact which accentuates the absurdity of considering the two groups as one, as we have done hitherto.

Strength of grip and height have been recorded in the same way in over 6,200 cases, and the differences of these two characters are as great as those observed in weight. Scholarship also varies with pubertal stage. In the high schools the postpubescents do from 30 to 50 per cent better in their studies; in the elementary schools the prepubescents lead from 30 to 47 per cent.

## Education

The particular periods when instincts appear have (in small part) been noted, and appropriate instruction has in the main been provided, but the great failure of education today is its inability to recognize the fact (where it is absolutely essential that it should) that children differ in rapidity of development. Its maladjustments are particularly evident and distressing at or about the time of puberty. The change from an asexual to a sexual life may occur at any age from six to twenty years, usually between twelve and fifteen; but when it does occur, the changes are profound. In the short space of six months the child becomes a man or a woman, and the process is fraught with the dangers and turmoil of a new birth. There is an outburst of physical growth, 4 to 5 inches are added to height, 30 to 40 pounds to weight, and strength may be doubled in a short space of time. New mental abilities appear, while others disappear; the type of play changes, new companions are sought; new likings, tendencies, enthusiasms, and emotions make up the whole life. Old landmarks of life fade and new ones are eagerly sought.

The sexual ripening determines an entirely new outlook upon life, the earning instinct looms large in the boy and the home-making instinct in the girl.

The important fact that is constantly disregarded is that the pubertal change leaves the child a wholly different being—different mentally, physically, morally, and ethically from the children in the stage just left behind.

This disregard results in the endeavor to teach classes that are composed of children of both prepubertal and the postpubertal stages, the immature and the mature.

Sitting alongside of each other, receiving the same teaching, subject to the same regulations and discipline, are children three or more years past puberty and others with three or more years lacking before the change will occur. The result is a chaos. No one course of study can be fitted to their disparate needs, and no one form of discipline can be enforced with each group with equal success.

This condition obtains in the whole of the grammar department of the elementary school, and in the first year of the high school. It is particularly troublesome near the point of articulation of the two schools.

The elementary school commences theoretically at or about the age of six, when the child is able to go to and from school, and has become a burden at home, which the head of the home, the mother, can and should shift in part to the shoulders of the public. The lower school has for its opportunity the years up to the time when the child reaches its pubertal age—this between the age (on an average) of thirteen or fourteen; hence allowing for slow progress, there will be about to seven or eight years for the elementary school. From ages of experiment, it has been found that the child will not study in school after this epoch has been reached unless undue compulsion has been used. The elementary school is naturally self-limited by the advent of puberty. The postpubescent child is often kept in the elementary school by force of will and authority, and what is worse, he is subject to the same treatment as the immature child.

The National Education Association has adopted a declaration as follows: That the law should recognize the difference between the chronological age of the child and his maturity, and that the school-age limit of each individual child should be determined by requiring the child to meet physical and mental tests, even though he be in the years above the age standard; in other words, a child's actual age should be determined by physio-psychological data corresponding to the normal standard for the age limits required by law. All children or persons failing to meet such a maturity test at the extreme school-age limit should remain under public supervision and control, either until they reach maturity, or permanently.

The same principle should be the guide in determining whether a child is fit to be employed in any occupation. Not whether a child is fourteen or sixteen years of age, but when he possesses the maturity of body and mind proper to a normal child of that age, should he be released from the guardianship of the State or the Community. Child labor laws should be so modified as to meet this requirement.

The section on preventive medicine of the American Medical Association revised the report of the committee on medical inspection of schools, which broadly recognized the doctrine of physiological age:

*Scope of the examinations:* Physical and developmental examinations should be sufficiently extensive to ferret out and determine, as far as possible, the causes of arrested growth, physical and mental.

1. The data of these examinations should serve as skilled information to parents and teachers in recommending and advising medical and dental aid essential for health and development.

2. When taken in connection with the school curricula and sociological factors of the pupils' environment, the data of these examinations should form the essential basis for the adjustment of educational activities, both physical and mental, to meet the requirements of physical and mental health, growth, and development. Further, it recommends "that not only the content of education but all the processes of education, should be considered in relation to the health and growh of pupils and students." It challenges every subject of instruction and every principle and every method of education.

Its central problem is growth and development. To this end physical and developmental examinations ought to determine defective physical and mental conditions, the degree of development, physiological age, and, as far as possible, mental age. Further, it recommends "as far as practicable, the grouping of pupils in accordance with development age."

(*To be continued*)

# Home Hygiene and Economics

## My Adopted Baby

### BY HIS AUNT

So much has been said about the bringing up of a child scientifically, from birth to the years of discretion, that I am tempted to take my pen in hand—not for the purpose of blowing my own horn, but to encourage the young, unscientific mother who scarcely dares look at her child for fear she may not look from the right angle.

It occurs to me that I ought to state my text. There are several that come to mind, namely: "He maketh the barren to rejoice;" "The barren shall be the mother of children;" "As the twig is bent the tree is inclined." I will start with, "He maketh the barren to rejoice," which seems to fit my case, for that is what I did. I have rejoiced from the day a dear baby eight weeks old was given to me by a dying mother, up to the present time. He has now passed his twenty-first birthday; his nineteenth and twentieth anniversaries were passed in the trenches "over there." Wounded and in hospital four times made a varied experience for him; but I was rejoicing all the time he was away. For you know it is a wonderful thing for a man to be willing to lay down his life for his friends. Greater love hath no man than this.

Let it be known that I am an old maid, and was without any experience in the care of babies when this dear child was put into my arms. My time had been passed for some years in teaching the young idea how to shoot.

How helpless I was when bathing time came! But I had determined that if love and gentle care would do it, this boy should be the nicest baby in the world. Didn't I delight in keeping him clean, keeping his bottles clean, keeping his clothes sweet!

A table covered with a blanket served for his bath. Here he was placed and folded in the blanket, and I began with fear and trembling what came to be a daily pleasure to both of us. First, the water must be tested. I had no thermometer at that time, so I put the tip of my elbow into the water, as I had read somewhere it was correct to do, and found it quite satisfactory. I began with face, neck, and ears—using a weak solution of boric acid for eyes and mouth. (I also washed his mouth with this solution before and after each feeding.) After these parts were gently patted dry, then one arm was washed, dried, and covered; then the other, and chest, abdomen, legs and feet followed—every part covered as soon as dried before exposing another. Last of all, he was turned over for his back to be bathed.

Of course, I didn't forget a good talcum powder. This was used, you know, in the wrinkles around the neck, under the arms, in the groins, under the knees, between the toes and wherever I thought it would make him comfortable.

You do not have to know a lot of scientific rules to do the cleaning act. I am not discounting the science of baby care and training, but you can make baby sweet, wholesome, comfy, and happy without knowing a rule. Love and common sense are very good guides in connection with a simple method. Have a method and adhere to it. Let it include regularity by all means; regular hours for bathing, sleeping and eating. Your method is likely to be as good as any one's. If you find it isn't giving the results you desire, change it. I regarded bathing, sleeping and eating as my three R's. You may perhaps remember that in the early years of this country, the schools concerned themselves principally with teaching what was called the three R's—"readin," "ritin," and "rithmetic." To my mind it might be to the advantage of our youth of today, were they better grounded in the same "three R's."

In the words of Samantha Allen, "I digress." To return to my baby: I made an invariable rule that when baby was put to sleep he should not be taken up till his nap was finished. His grandmother lived with us, and her ideas were not mine. Many a sprint we had when baby would fuss or cry a little. I generally beat her to the crib, turned him over, examined safety pins, passed my hand all over his soft warm body, and if I found no reason for the crying, he wasn't taken up. Just changing his position would renew his sleep.

Fresh air comes in here. All of his naps after the morning bath were taken out-of-doors in his carriage—a sensible carriage, permitting him to lie in a horizontal position, with plenty of room for the stretching. He became so accustomed to the outdoor air that even in rainy weather I placed the carriage in a sheltered spot, covered with a light rubber sheet, and let him have his nap where he enjoyed it. At night, doors and windows were wide open; we had no sleeping porch. But he was a fresh-air baby and grew like a pig. I never knew just what that meant till this last summer when I watched some young pigs grow during their first week. I didn't smother him with clothing in hot July and August weather. I gave him a lukewarm sponge several times a day in the hottest weather. This was unheard of in his grandma's days, consequently it was a fatal thing to do. I can laugh now at the scowls I got, but what did they matter so long as baby cooed, and smiled, and grew?

The diet was another bone of contention between myself and Grandma. She was always wanting him to taste of this and of that, while I contended that, since he was thriving on what I was giving him, that was sufficient; but many a taste he got in spite of my watchfulness. It probably didn't injure him, but increased my anxiety that everything should be well with the child. And more than that, he didn't need it. Long before he was weaned from the bottle she wanted to introduce him to candy. I think we quarreled over that, but my will proved to be the stronger. Not till he was running around was the battle renewed. He was eating simple foods at the table with the family and I had to meet the issue. I procured some of the old-fashioned white peppermints and every day at dinner, one was placed at baby's plate; the box was placed on a small table within his reach. For some days this went on, when he noticed that he was the only one who had a peppermint. The next day when we went to the table, baby had opened the box and placed a peppermint at each plate. From that time on each of us had a peppermint at dinner. The wonderful thing about this was that he never touched the box at any other time; so I consider that I managed the candy question rather diplomatically.

"As the twig is bent, the tree is inclined."

This text applies to the development and training of the will of the child.

A caution to begin. In bending the twig, be sure not to break it. This is easily done with a young child. What greater harm could you do a child than to break his will and thus possibly injure his character? With the baby in question, I began training bfore he knew speech—began with his playthings. At night I would ask him to pick up his blocks, take time to put his little hand on one, clasp his fingers around it if necessary, and assist him to place the block in a box. Every night we did this till he knew what "Pick up your blocks" meant. It began to be part of the day's play. I helped him play the game. So it was with everything. Whenever I asked him to do a thing, I dropped whatever I was interested in until I knew he understood and obeyed. It became his pleasure to obey me, even as it is today, in his twenty-second year. Not long ago I had a letter from him in which he writes: "I don't know what I should do without my old Auntie." Doesn't that pay for the time I gave? It certainly warms my heart when I think of it.

Then when I discovered that the boy could, and did, repeat the Mother Goose rhymes with which childhood is properly regaled, I began to repeat other things worth while. I think I began with that familiar poem:

"Where did you come from, baby dear?"
"Out of the everywhere into here."
"Where did you get your eyes so blue?"
"Out of the sky as I came through."

The whole poem was repeated many times, till he learned when I said the first line to return with the second of each stanza. Then followed the memorizing of that wonderful psalm-poem, "The Lord is my shepherd, I shall not want." This habit made a very happy going-to-bed for us both.

When he was in France, the soldier boy wrote me that he remembered many of the things we did together and appreciated what I had done for him. I can say with a good deal of pride that he is making a fine man and is going "about his father's business."

Deep love, a desire to build "a sane mind in a strong body," and a willingness to put the baby's care before anything on earth, will help any young mother or guardian of a child to do and to learn the right things pertaining to the child's welfare.

# The Bad Effect of Faulty Posture in Children

Doctors Talbot and Brown, in an interesting paper in the *American Journal of the Diseases of Children,* for September 1920, discuss at some length the evil effects of bad posture in growing children.

They call attention to the great loss of efficiency found in adults in the war as the result of bad posture, the correction of which by setting-up drills converted thousands of inefficient men into strong, vigorous soldiers.

An important feature in these cases is the fact that the faulty posture, which is the cause of weakness, inefficiency and various bodily disorders, may be so easily corrected by the proper instruction and by a little painstaking effort; and the good effect of the change appears almost immediately.

Faulty postures are held by these authors to be responsible for faulty digestion in children, especially for the loss of the power to digest fats. They are also a very potent cause of chronic constipation and of the acute abdominal pains from which many children suffer as the result of cramps or spastic contraction of the colon. Sometimes these pains are so severe that they are wrongly attributed to inflammation of the appendix and other serious disorders, and may even lead to operation.

Parents and teachers should give special attention to this matter of posture in children. First of all, we should set a good example by always holding the body erect, whether sitting or standing. The erect posture should, so far as possible, be maintained in work of all sorts; that is, the chest should be kept high and the abdominal muscles well held in.

Chairs are generally faulty, and should be corrected in such a way as to fit the normal curve of the back, thus giving support and holding the chest up when the body is relaxed.

# The American Institute of Baking

The American Institute of Baking, founded by the American Association of the Baking Industry, has begun work in Minneapolis under the direction of Dr. H. E. Barnard, assisted by an advisory committee of the National Research Council and in co-operation with the Dunwoody Institute. Dr. Barnard has been connected with the State Board of Health of Indiana for nearly nineteen years, and was Federal Food Administrator of that State during the war.

For thousands of years bread-making has been a craft rather than a science, and in all its essentials and in many of its details it has remained practically unchanged for ages. The attempt is now to be made to make bread-making a science, or at least to found it on science. Some of the larger baking companies have already tested the value of science as applied to their business, and one of these companies, using more than a million barrels of flour a year, has been able to introduce methods leading to great economies in its work. It was found that by furnishing the yeast with certain stimulants and special chemicals foods a saving of some of both the flour and sugar formerly consumed by the yeast during its growth, was made. This is not only a saving to the baker but also a conservation of valuable human food materials without any diminution in the quality or food value of the bread.

However, but few of the 28,000 bakers in the United States are in a position to conduct scientific experiments or to have them conducted for them separately. Of these 28,000 bakers, only 7,500 use more than 50 barrels of flour a month, while only 2,500 use more than 200 barrels a month. For each one of these bakers to try to engage in scientific reseach would obviously result in a waste of effort, even if the expenses could be met, but by working in co-operation, as now arranged by the new Institute of Baking, with the scientific aid of the specialists on food and nutrition, agriculture, chemistry, and physics, of the advisory committee of the National Research Council, all of these bakers can get the advantage of a strong scientific effort for the rational improvement of their methods.

# Wheat Germs for Babies

Daniels, Byfield, and Laughlin have shown (*American Journal of Diseases of Children*) that the addition of a porridge prepared from the wheat embryo to the diet of babies stimulates their growth. This is due to the growth-promoting vitamine found in yeast. Rats fed on fine flour do not grow for the lack of this.

# Delicious Recipes

MRS. HARRIET NEWTON

### Mock Raw Oysters

2 bunches oyster plant
2 tablespoons lemon juice
2 tablespoons butter

Wash and scrape the oyster plant well. Cut in small pieces. Boil until tender, drain and serve upon a lettuce leaf and pour melted butter and lemon juice over it.

### Pear, Cantaloupe and Water Melon

½ cantaloupe
1 thick slice water melon
2 pears
2 tablespoons lemon juice
1 cup powdered sugar

Dice pears, cantaloupe and water melon. Add lemon juice. Add all together. Serve upon a lettuce leaf and sprinkle powdered sugar over it.

### Boiled Rutabagas

2 rutabagas
2 tablespoons butter
2 tablespoons lemon juice

Peel rutabagas very thick, cut in slices about ½ inch thick. Boil until tender. Drain and serve upon a lettuce leaf. Pour melted butter and lemon juice over it.

### Apricot, Cabbage and Carrot

6 apricots
1 cup chopped carrots
1 cup chopped cabbage
3 tablespoons mayonnaise

Chop cabbage and carrots fine. Cut apricots in fine strips. Mix all together. Put a ball of mixture upon a lettuce leaf, a teaspoon of mayonnaise on top of it, and make a cross of two strips of apricot on top of dressing.

### Carrots, Cucumber and Onion

1 cup chopped carrots
½ cup chopped cucumber
2 tablespoons chopped onion
2 tablespoons chopped peppers

Chop all fine. Mix with French dressing, and serve in a nest of shredded carrots.

### Eggs, Cabbage and Green Peppers

1 cup chopped cabbage
2 hard-boiled eggs
2 tablespoons mayonnaise dressing
2 tablespoons chopped green peppers

Cut hard boiled egg in small squares. Chop cabbage and peppers fine. Mix with dressing and serve upon a small cabbage leaf.

### Cabbage, Pineapple and Orange

2 cups shredded cabbage
1 cup shredded pineapple
½ cup seedless raisins
2 oranges
Mayonnaise dressing

Mix shredded pineapple and cabbage with the dressing. Take four sections of orange and place upon a lettuce leaf in a square shape, put ball of the mixture in the center and dot with raisins.

### Sanitarium Special Salad

6 slices pineapple
½ cup gelatin
½ cup cottage cheese
½ cup Savora broth

Take hot savora broth, add ½ cup prepared gelatin or agar agar. When cool, mix in the cottage cheese and pour into small moulds. When firm, place upon a slice of pineapple and dot with small pieces of olives. Serve upon a lettuce leaf.

### Stewed Carrots

6 medium-sized carrots
1½ cups cream or milk
2 tablespoons butter
2 tablespoons flour

Wash and scrape the carrots and cut into strips; put into a stew pan with water to cover, add a teaspoon of salt and boil slowly until tender. Drain and replace in pan. Rub the flour and butter together and add to carrots then the cream or milk and bring to a boil. Serve hot.

# Results of Restricted Diets

EMMA FRANCIS

Choosing a diet by means of likes and dislikes is bad dietetics, and must result in poor nutrition unless one happens to like the right foods. A diet containing an overabundance of starches and sugars, with or without fat, leads to disaster. A diet composed of the white breakfast foods, such as farina and flaked cereals, white bread, pancakes, potatoes, macaroni, rice, pies, puddings, cakes, candy, butter, cream, with a little fruit, occasionally meat, milk or eggs, is low in protein, salts, and the three vitamines. It is essential that we should keep up with the discoveries that are being made constantly in nutrition. Another vitamine, water soluble C, has made its appearance, and D is probably on the way. Orange juice contains both the water soluble B and the anti-scorbutic vitamine C.

Through the investigations that have been made to determine the cause of the so-called "deficiency diseases," scurvy, beri-beri, pellagra and rickets, it has been found how important is the proper adjustment of protein, fat, carbohydrates, vitamines and salts to the animal body.

### Cause of Deficiency Diseases

The cause of pellagra has been attributed to spoiled corn and to infection, but the last word is that it is due to the lack of the proper kind and amount of protein in the diet, and possibly the salts and vitamines.

Beri-beri has been repeatedly cured upon the addition of some fresh food, or a food that contains the vitamine called water soluble B, found in nearly all the natural foods in more or less concentration, but not in those that have lost the valuable vitamine factor in the hands of the manufacturer. The disease first became known among the people who eat largely of polished rice. The use of unmilled rice prevents, or cures, the trouble.

Scurvy became known more generally when it was thought necessary to destroy disease germs in milk by heating it. Until we learned how to eliminate filth and disease from milk, many babies lived as long as they could on the heated milk, and when they ceased to grow, orange juice seemed to supply the needed antiscorbutic, which cures or prevents scurvy.

The cause of rickets in children has been attributed to the lack of the fat soluble vitamine, to the loss or insufficiency of calcium and to malnutrition.

Xerophthalmia is an edematous or inflamed condition of the eye caused by the lack of the fat soluble vitamine in the diet. Children on a skimmed milk diet or a diet too largely made up of seeds or seed products, are victims. The trouble disappears immediately upon the feeding of whole milk.

Osteomalacia is malnutrition of the bones caused by too little calcium and phosphorus in the diet. Milk is the food richest in calcium; the outer layers, the bran, of the cereals are highest in phosphorus.

Anemia is an impoverished condition of the blood, that is, there are too few red cells. The number of red cells can be increased by including foods high in iron, for example, greens, egg yolks, peas, beans, nuts, prunes, figs, raisins, etc.

### The Foods That Supply Vitamines

Therefore to keep ourselves free from pellagra, beri-beri, scurvy, rickets, xeropthalmia, etc., we must include in our daily dietary the following:

A complete protein, or a mixture of proteins that supply the required amino acids for the building up and the repair of body tissues.

A fresh fruit or vegetable that is high in water soluble vitamine such as oranges, prunes, tomatoes, potatoes, whole cereals, and green leaves like spinach, chard and cabbage.

The antiscorbutic foods are oranges, tomatoes, potatoes, onions.

Fat soluble A is found in milk, cream, butter, egg yolk, and green leaves.

Whole cereals, greens, fruits, vegetables, milk and egg yolks furnish the minerals.

Many of us do include the above foods in the day's dietary, but there are many children and adults on restricted diets that receive very few of these foods or too small amounts of them.

### What the Infant Requires

The infant who is drinking less than a pint of milk is not receiving its full share of antiscorbutic vitamine. If the pint of milk is heated, the child receives less of the antiscorbutic vitamine than if the milk were given in the raw state. The addition of orange or tomato juice, potato water, or prune juice, will make up the deficiency. The orange juice must be from a sweet orange and it must be fresh, and diluted (one teaspoon of juice to three teaspoons of water) for the initial doses, the amount to be increased.

The tomato juice may be fresh or canned, but it must be strained. The water in which potatoes are cooked can be used but it, as well as the prune juice, is not of as great value as the orange or tomato juices.

The child towards the end of his first year is needing iron. The orange, tomato, prune, egg yolk (used in a thin custard) and spinach juice, are all high in iron.

Each child, from its first year to its twelfth year, must use a quart of milk a day to insure a good protein and the required amount of calcium.

At the New York State Medical meeting in the spring of 1920, a Symposium on Vitamines was held. Mendel and Osborne of Yale spoke on Fat Soluble and Water Soluble Vitamines, Hess of New York on the Antiscorbutic Vitamines, while McCollum of Baltimore, Funk, Lusk and others discussed the papers.

Osborne sounded a note of warning to the physicians as to the danger some of their patients might be in on account of restricted diets either lacking, or being low, in water soluble vitamine. Diabetics in advanced stages live upon thrice cooked vegetables, and each time they are cooked, the cooking water is thrown away, leaving the vegetable deficient in water soluble vitamine. Fortunately, tomatoes, rich in both vitamines, are allowed in diabetes.

### Complete and Incomplete Protein

The adult who needs a low protein diet because of toxic conditions in the intestines, would do well to restrict the protein intake to that obtained from milk. Milk protein is a complete protein. Experimental rats can grow to full size on milk protein as the only source of protein if the amount is twelve per cent of the diet. The rat needs eighteen per cent of most of the other proteins; therefore, milk protein is an economical source of protein, not only economical to the purse, but also to the body. An excess of protein burdens the kidneys to eliminate what the body cannot use; an excess of protein also causes putrefaction in the intestine. A small amount of the complete proteins, like milk, eggs, soy beans, peanuts and all nuts, will supply body needs. While a mixture of many incomplete proteins may supply the body with the necessary amino acids, certain mixtures of proteins may fall short. We have not, as yet, an extended list of combinations of incomplete proteins, such as rolled oats and gelatine, corn and peas, oats and beans, which, when combined, make up each others' deficiencies. Therefore, if we trust to an abundance of incomplete proteins, rather than to a small amount of a good protein, we load up the body with a supply of nitrogen which must be eliminated, or toxins will be produced.

Milk will not only supply a good protein, but the cream contains the fat soluble vitamine which prevents xeropthalmia; the milk sugar or lactose furnishes lactic acid which destroys the putrefactive bacteria in the colon; the seven salts, calcium, potassium, sodium, magnesium, chlorine, sulphur, prosphorus, are all there in the right proportion.

Eggs are also complete in the protein content, but the white is highly toxic and low in salts. The yolk is rich in fat soluble and water soluble vitamines, in iron and in lecithin, a nerve builder.

Meat is a complete protein, but that is all that can be said to its credit. It is low in water soluble vitamine; the fat-soluble A is completely absent in muscle meat; it is low in calcium. Eggs contain thirty-three times as much calcium as meat and sixty-four times as much iron. Skim milk is sixty-four times as rich in calcium as mutton is.

### Restricted Diet Cases

Dr. Stewart R. Brown of the Emory University School of Medicine in Atlanta, Ga., found among his private practice twenty-five pellagrins, nine of whom lived in elegant or luxurious homes with an abundant table spread before them. Ten of the twenty-five lived in rural communities where they either raised an abundance of vegetables and had their own chickens and cows, or where food was plentiful. Most of them when questioned as to their diet, gave a list of foods strangely like the typical Goldberger pellagrous diet, though more limited, such as cereals, bread, coffee, bacon, cabbage, spinach, little or no meat, no milk or eggs. One woman ate crackers instead of bread. Two were pronounced "knick-knack eaters," one a "nibbler," one "hardly ate anything," two ate proprietary foods, one was a "skimpy eater," "not enough for a baby," one "finicky," many of them "never hungry" or "did not want to eat."

Three women had worried a great deal, lost their appetite, were constipated or suffered from insomnia. Four women prepared the food for the family, then often did without or ate package and canned food. A dweller of an elegant home in the city lost her appetite through no work and no exercise. Another would talk through the meal and eat little.

There were only four men in the list of twenty-five. One economized in everything, including food; a rich farmer worked hard and ate little; a business man worked twelve to eighteen hours and ate canned goods around his store. Four ate no meat, milk or eggs, each saying they were averse to these foods. One woman whose diet consisted of bread, toast, crackers, buttermilk, one egg daily, soup, tomatoes, rice, grits and a cereal preparation, through worry, had lost her appetite, and ate very little for four months. A young woman, whose diet included sufficient protein, bread, syrup, fat meat and vegetables, was a small eater.

Fifteen patients made rapid improvement when including meat, milk or eggs in the diet, all gaining their lost weight, one making an increase of twenty-two pounds over her maximum weight.

Doctor Roberts relates that during severe attacks it becomes necessary to feed the patients mouthful by mouthful, and says that it is dangerous to wait until the patient "feels like eating." To quote: "Here less food means more pellagra; more food, less pellagra." He advises a sojourn in a hospital. "Food, flat and fat are triple alliterative therapeutics for pellagrins."

A patient who had previously undergone a series of operations and suffered from indigestion, nausea, etc. developed pellagra "under our very eyes in the midst of an unsuccessful attempt to feed her."

Five of the patients died, two having made further inroads on their bodies by the use of whiskey, two had several recurring attacks. Pellagra often results in insanity and two of the twenty-five lost their minds.

All investigators in nutrition emphasize the importance of every factor in nutrition. Since the biological method (testing the growth, reproduction and rearing of young of animals by feeding experiments) has been used, the value of every dietetic factor has been repeatedly demonstrated.

## Experiments Establish Human Diet

The question always arises, Can the results with animals be interpreted the same for human beings? Animal life seems to respond to the same dietetic measures. It has been found that the human baby needs orange juice to cure a case of scurvy. The guinea pig needs the same. Recently Harden and Zilva have found that monkeys weighing four to six pounds are protected from scurvy by the same quantity, two to five cubic centimeters, as the guinea pigs weighing three-fourths of a pound and over. The only difference seems to be between the length of time in which the disease appears in the absence of antiscorbutic in the diet. The time for the symptoms to appear is two months for the monkey and three weeks for the guinea pig.

In the July, 1920 number of the *British Medical Journal,* McCarrison gives an abstract of work done on the monkey, showing the effect of diet on the gastro-intestinal tract. He says: "The results of these experiments on monkeys confirm those previously recorded in the case of pigeons fed on similar food. They may be considered as applicable in kind, if not in degree, to human beings' subsisting, as frequently happens, on food similar in composition to that on which the monkeys were fed."

Ten monkeys were fed on rice heated to 130° C. (100° C. is boiling point) for an hour and a half. Four were given the same, plus butter. These two diets represent a high carbohydrate (starch) diet with and without fat. The diets also lack proteins, salts and the B and C vitamines. The monkeys lost weight twice as fast on the fat diet as those did on the diet without fat.

A diet of rice, wheaten bread, milk, ground nuts heated to the same temperature for an hour and a half, plus a small amount of fresh onion, brought six monkeys almost to the death point. This diet lacked only the A and B vitamine, the onion furnishing the C vitamine. The addition of butter, providing the A vitamine, did not save five other monkeys from disaster. The heating of the food destroyed the B vitamine, which is proven by the control monkeys who lived and showed normal bodies on autopsies on the same diet unheated.

All the monkeys except the controls showed lack of appetite, vomiting, diarrhoea and dysentery. At the close of the experiment the monkeys still living were fed a normal diet and the dysentery disappeared.

In the dead monkeys, the omentum (fatty apron covering the intestines) weighed three to four grams instead of fifty to sixty grams as in normal monkeys. The stomachs and intestines were distended with gas, walls thin and transparent in places, and intense colitis in the majority of cases. The dysenteric bacteria found "in the malnourished state of the intestinal muscosa (walls) of famine-stricken individuals, the conditions necessary for their non-hampered growth."

All the internal organs had wasted or diminished in size. The brain increased in weight, more so in the monkeys on the fat diet. The author comments that "this may account for the headache and other symptoms observed in certain cases of mental disorder in the human subject."

The investigator's commentary is here given:

"Such degrees of malnutrition as those produced in this experiment are rarely encountered in man during peace, but the late war afforded many examples of gastro-intestinal disorder amongst refugees, prisoners of war in Germany and Turkey, and the starved inhabitants of certain countries. The facts here recorded afford a pathological explanation. They present an extreme picture: the end-results of malnutrition. But between this extreme on the one hand and perfect nutrition on the other there are intervening degrees of malnutrition which must determine the departure from the health of the gastro-intestinal tract. It is with the 'mean' rather than with the 'extreme' that the physician is mainly concerned; with the long-continued use of imperfectly balanced and deficient food rather than with the lack of victuals; with the beginnings of disease rather than with the end-results.

"The gastro-intestinal lesions here described were initiated by dietaries too rich in carbohydrates and too poor in other essential attributes of a perfectly balanced ration. It may be expected, then, that gastro-intestinal lesions of like kind, if not of like degree, will result in man from the continued use of such dietaries .

"To maintain the gastro-intestinal tract in health, and to enable it to protect itself and the body generally against invasion by ingested pathogenic organisms, it is necessary to provide from birth onwards a satisfactorily balanced dietary containing a sufficiency not only of proteins, calories, and salts, but also of accessory food factors of all three classes.

"Complete deprivation of 'B-vitamine,' especially if there be also imperfect balance in other essential requisites of the food, will lead to rapid dissolution and death; a subminimal supply of this vitamine will lead, in like circumstances, to slow dissolution and disease."

# The Sun Remedy for Bone Disease

Rollier demonstrated years ago the great value of sunlight in promoting recovery from disease of the bones in children. Under the influence of daily sun baths remarkable recoveries occurred in cases which had been regarded as incurable. It was found necessary to expose the entire surface of the body to the sunlight, as the cure is due not simply to the local effects of light but to improvement of the general health resulting from the action of light upon the skin.

The so-called Alpine lamp and the quartz light do not produce the same effect as sunlight, from which the conclusion is drawn that the beneficial effects observel are not produced by the actinic or chemical rays of light alone. No penetrating luminous rays and heat rays participate in the beneficial effects of sun bathing. This fact has been particularly pointed out by Freiberg.

Light from the ordinary arc lamp is the best substitute for sunlight, and, indeed, the arc light has the advantage over sunlight.

## Hiccough, or Singultus

This difficulty may be induced by eating too rapidly or swallowing food in too large masses, or by drinking carbonated waters, or the generation of gas in the stomach in any way. It may also result from the reflex irritation originating in disease of the gall-bladder or in the pelvic viscera.

Hiccough is also often due to an accumulation of irritating liquids in the stomach. Washing out the stomach, drinking copiously of hot water, and care to avoid the errors in eating which induce the trouble, are the measures necessary to secure relief.

## Hypersensitiveness to Certain Foods

For many years it has been known that children, as well as adults, may be made very ill by even small quantities of foods and other substances which are harmless to others. So long ago as 1831 Elliotson noted the connection between the pollen of plants and hay fever. Hutchinson in 1884 recorded the observation that certain patients suffered from nausea, vomiting and abdominal pain after eating eggs. Within recent years a large number of similar cases have been reported. It is now known that both children and adults are frequently sensitized to cow's milk, shellfish, meat and other substances.

## Apples Better Than Meat

Sherman recently reported the results of experiments conducted by himself and others (Proceedings Society Experimental Biology) which show the superiority of apples over meat. The experimenters found that rats fed on white bread alone died in six weeks. Rats fed on white bread and meat lived no longer, also dying in about six weeks. Rats fed on bread and apples lived much longer, although this diet was not capable of producing growth. On a diet of bread and turnips the animals lived and grew, though slowly, while on a diet of bread and milk, growth occurred at the normal rate.

The lesson to be drawn from this experiment is that the American table should be more bountifully supplied with fruits, especially apples, and that meats do not rightfully hold the position in the bill of fare which has so long been accorded them.

## Vitamines and the Teeth

Mellanby (*Dental Record*) has recorded a series of experiments on dogs which demonstrate the importance of the fat-soluble vitamine for proper development of the teeth. It is for this reason that growing children should be well supplied with milk. Every child under five years of age should have one quart of milk a day to provide an abundance of vitamines and lime.

## Energy Requirement of a Child

Dr. Niven estimates that a child of seven years requires daily 62.5 grammes of protein and 1,750 calories of energy, and that his three meals contain enough to supply them.

Niven considers that the gain in wealth to the community obtained by passing children on to the working period in a state of physical efficiency would be so enormous as to fully justify the additional burden by taxation which would arise from feeding necessitous children at school; and concludes that such feeding ought to be done by the State or municipality.—*Tibbles.*

## The Effects of Chilling the Body

Mudd and Grant have shown that chilling the body lowers the resistance of the mucous membrane of the throat and promotes the growth of certain streptococci which are known to be active in acute inflammations of the throat.

## Rickets and Acidosis

Acidosis is likely to occur in all chronic conditions of malnutrition. As a result the lime and other alkaline bases combine with the abnormal acids present, thus robbing the bones and giving rise to the various deformities characteristic of rickets. From one town in Germany 30,000 cases of rickets have been reported.

## Body Changes Due to Age

The bones grow thin and brittle with advancing age, the tissues atrophy and become replaced by hypertrophied connective tissue, especially visible in the arteries. In the brain and nerves, the cells which perform motor, sensory, and intellectual functions give place to lower or neuroglia cells. The liver cells recede before the invasion of connective-tissue cells. A similar condition takes place in the kidneys and other organs. In short, old age is a struggle between the proper functional cells of the organs and the simple connective-tissue cells. A similar condition takes place in the kidneys and other organs. In short, old age is a struggle between the proper functional cells of the organs and the simple connective-tissue elements, and the latter are the conquerers. Phagocytes, too, aid in the process, as is seen in the whitening of the hair. Normal hair is full of pigment, but at a certain period the cells of the medulla become active, and devour the pigment granules within reach, and so the hair, robbed of color, gives the first manifestation of age. The increasing porosity of the bones is likewise due to the absorption of the osseous lamellae by phagocytes. —*Tibbles.*

## The Vitamines of Potatoes

The potato is rich in growth-promoting vitamines, and differs from cereals in the fact that these food essentials are not confined to the surface layers but are well distributed throughout the whole tuber.

## Hair Food

We have had brain food and bone food and skin food, all fakes, unfortunately; but now comes a German professor who claims to have discovered a sure enough hair food. The professor bases his discovery on the fact that hair, nails, and feathers contain a large amount of eystin, some seven or eight per cent, while other animal proteins contain at the most less than three per cent, and vegetable proteins scarcely half of one per cent. The professor claims that by administering keratin, which is rich in cystin, in quantities of 15 to 20 grains a day, he was able to nearly double the rate of growth of hair on his face and head. He claims, in fact, that by taking the amount of keratin named every day for two months, the average growth of hair was increased to three-eighths of an inch daily. When keratin was administered to a sheep, the production of wool was increased 75 per cent. One man experimented upon gave up the use of the remedy because he was obliged to shave twice a day. A German firm is now offering the remedy for sale in two forms, one for use by human beings, the other for sheep.

## The Rationale of the Curative Power of Light Baths

Dr. Sonne, of Copenhagen, claims to have demonstrated that the actinic, or chemical, rays of the sun and of the electric light are not the source of the curative power of sun baths and light baths.

He claims that light rays from all sources, even the light from the mercury vapor lamp, heat the blood to a remarkable degree and in this way exercise their therapeutic effect.

## Sweating

Sweat is always acid, whether produced by exercise or by heat, but that produced by heat is always more acid than that caused by exercise.

# PUBLISHER'S LETTER BOX

### Fifty Years of Biologic Living

Ida S. Nelson,
*Sanitarium, Calif.*

"I appreciate the Good Health coming to my desk, because I feel that it gives me reliable information that I can always depend upon for practical use.

"My father has lived the biologic life for over 50 years. He has been a subscriber and reader of Good Health for 50 years. He has passed over fourscore winters. Is hale and hearty. This summer he insisted on being a daily active hand in the harvest field, and took second place to none, all due to his biologic life."

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"I have read Good Health for about twenty years and think I have derived much benefit from the same. I am past eighty years old and enjoy very good health and am at my desk every day."

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### Twenty Years a Subscriber

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"I have been a subscriber and reader of Good Health for twenty years, and have tried to follow the biologic life for a like period.

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*Rupert, Idaho.*

"Find enclosed check for Good Health. Keep it coming. Can't do without it."

Maybelle Tindolph,
*437 E. 48th Place,*
*Chicago, Ill.*

"I greatly appreciate your valuable magazine, so do not wish to miss the January number."

### A Quarter Century Subscriber

D. G. Hendricks,
*Chester, Pa.*

"I am 76 years old. Have been a subscriber, reader and a great beneficiary of Good Health for many years. I have no record of my first subscription, but believe it to be from 20 to 25 years ago. I am working 8 to 10 hours a day, and feel better than 20 years ago. I practice and preach daily the doctrines of Good Health. I eat no meat, use no alcohol or tobacco, and neither coffee nor tea."

### An Able Periodical

LeVant Dodge, LL.D.,
*Berea, Ky.*

"Good Health is a very able periodical, and we do not want to lose out."

GOOD HEALTH

Vol. LV DECEMBER, 1920 No. 12

## EDITORIAL DEPARTMENT

# Where are We Going?

What would a farmer think of a flock of sheep in which three-fourths of the lambs were defective, or a herd of cattle three-fourths of which showed deformities, decayed teeth, or other unsoundness?

We have improved our horses and cattle till they are the finest that the sun ever shone upon. We have improved our dairy cattle until their capacity for producing milk and butter is almost beyond belief. We have improved our hens and our hogs to an amazing extent.

Man has improved every creature he has redeemed from the forest and the plain, with the exception of himself. Himself he has neglected until race degeneracy has become a certainty, and race extinction a possibility.

The only way to escape is through living the simple life. Why not begin today?

# Errors in Diet

The many forms of indigestion and most of the disorders of nutrition are without doubt due to errors in diet. The purpose of this article is briefly to summarize those errors which are most common among civilized people.

### Overeating

An excessive intake of food is much more common than a deficiency. The average person does not consider the fact that there is no definite relation between the bulk and weight of food and its nutritive value. For example, a pound of almonds has more food value than 20 pounds of cabbage, cauliflower, eggplant or 15 pounds of beets, carrots, string beans, onions, squash or turnips.

So it is possible for one to unduly distend the stomach with bulky food, such as coarse vegetables or juicy fruits, while the quantity of nutriment absorbed may actually be insufficient to nourish the body. On the other hand, one may easily take a great excess of nourishment while the actual weight and bulk of the food consumed is very small.

On this account it is highly important that every one should learn how to estimate the actual value of foodstuffs as expressed in calories. This may be easily done by a careful study of tables which have been prepared and which are easily obtainable.

The general bad effects of overeating are an excessive gain in weight, dullness and drowsiness after meals with insomnia at night. It is to be noted that overfed people are more likely to suffer from cancer than the underfed. According to Williams, cancer is almost unknown among the poorly fed Hebrews of East London, but is very common among the wealthy Jewish bankers of Hyde Park. Bright's disease, arteriosclerosis, high blood pressure and apoplexy are also among the consequences of overfeeding. In time the stomach breaks down from overwork. Flatulence, hyperacidity, disorders of the liver and gall-bladder, and hemorrhoids are among the common gastric disturbances.

It is always to be remembered that what would be a sufficiency or even not enough for a hard-working laborer might be a great excess for a man of sedentary habits.

The custom of serving the food in successive courses, and especially the plan of so arranging the bill of fare as to present the most highly palatable dishes last, encourages eating to excess, and is productive of great mischief. Desserts consisting of rich dishes such as ice cream, pastry and confectionery are on this account unwholesome. Persons who are addicted to overeating should adopt the plan of eating at the beginning of the meal a considerable quantity of bulky food, in order to induce a sense of satiety before an excess of nourishment has been taken.

Special injuries may result from an excess of particular food principles, for example, an excess of fat leads rapidly to obesity and induces so-called biliousness by causing too long retention of the foodstuffs in the stomach and the food residues in the colon, thus promoting intestinal putrefactions. Intestinal toxemia induced in this way is the explanation of the injury from eating an excess of fat rather than "clogging" of the liver, the old explanation.

Persons whose stomachs do not produce a sufficient quantity of gastric juice and those suffering from intestinal toxemia, as a result of chronic constipation, should especially avoid an excess of fat. The oil enema, sometimes employed for the relief of constipation, may do harm by promoting intestinal putrefaction and by interfering with gastric digestion. On this account paraffin oil should be used for this purpose rather than olive or linseed oil, for the reason that it is non-absorbable and has no effect upon the digestive processes and does not undergo fermentation and putrefaction.

Less injury, perhaps, is likely to follow from an excessive intake of starch than from any other quantitative error in diet. Starch taxes the digestive process less than any other food principle and produces less disturbance of metabolism. This cannot be said, however, of cane sugar, the excessive use of which not only leads to disorders of digestion, particularly hyperacidity, and chronic gastric catarrh, but is very probably one of the leading causes of diabetes. The free use of cane sugar also leads to lime starvation. Malt sugar is much less likely to produce gastric or nutritive disturbances, and the free use of milk sugar, because of its slow absorption, may become a valuable means of changing the flora by promoting the growth of acid-forming organisms in the colon.

An excess of protein is one of the most grievous of all dietary faults. It may be rightfully regarded as one of the leading causes of chronic disease, through the intestinal toxemia which results from the putrefaction of the undigested residues of meat and other proteins in the colon and the absorption of indol, phenol, and other putrefaction products. Bright's disease, rheumatism, cancer, gastric ulcer, skin disorders, neurasthenia, insomnia, and a long list of chronic disorders directly or indirectly due to intestinal toxemia are among the evil results of a high protein diet.

The researches of Rubner, Chittenden, Sherman, Folin and others supply a scientific basis for the view that one calory of protein for each pound of normal body weight is sufficient to supply all the nutritive needs of the average individual. This amount of protein will be supplied by a pint and a half to two pints of milk, according to the size of the individual. If 16 to 20 ounces of milk are taken daily in connection with other foodstuffs, even though eggs as well as meat are excluded from the dietary, the supply of protein will be ample. When meats are discarded from the bill of fare and eggs are used in moderation, there is very little danger of an excesive intake of protein; but such an excess is almost unavoidable with a mixed diet.

Injury may also result from making the bill of fare consist too largely of cereals. such as are supplied by ordinary breakfast foods. Cereals contain an excess of mineral acids, and when used in too large proportion may lead to a preponderance of acids in the body, thus inducing lowered vital resistance and impaired nutrition. If the cereal intake of the average individual were reduced one half, by substituting an equivalent amount of farinaceous material in the form of potatoes and other vegetables, the result would be a great improvement in our national health. Potatoes are rich in alkaline salts, which neutralize the excess of acid found in cereals as well as those produced by the cell activity of the body. These useful salts are also found in fruits. The excess of acids found in meats is four times as great as that in cereals; hence the injury from a heavy meat diet is still greater.

### Underfeeding

Underfeeding is most frequently observed among the women and children of the poorer classes. Invalids also, through lack of appetite or ignorance of food values, frequently suffer from too small an intake of food. An adult person who is taking much less than 1,800 calories daily is almost certain to be underfed.

Underfeeding is naturally accompanied by a loss in weight, the degree of which is a fairly accurate means of determining the measure of the food deficiency. The underfed individual also suffers, often to a very extreme degree, from a deficiency of vitamines.

As regards individual food principles, there is little danger of a deficiency of protein if one takes an ordinary mixed diet, although care should be taken to supply a sufficiency of complete proteins by the use of a pint or two of milk daily or a few ounces of soy beans, almonds, peanuts or other nuts.

Modern studies of metabolism have shown that at least two or three ounces of carbohydrates (starch and sugar) must be taken daily to insure the proper utilization of other foodstuffs and to prevent acidosis. A normal dietary contains six or eight times this amount of carbohydrates.

The amount of fat actually required for perfect nutrition is certainly very small. Hindhede kept two men in perfect health on a fat-free diet for 23 months, but he found it necessary to feed spinach and other greens in large amounts.

## Deficiency Diet

Bills of fare notably lacking in vitamines are very commonly found in prisons, almshouses, hospitals for the insane or feebleminded, college dormitories and boarding houses, as well as in private homes. A breakfast made up of toast and tea, bacon, griddle cakes and syrup, a very common breakfast menu, are almost altogether lacking not only in vitamines but iron, lime and cellulose, highly essential elements of a complete dietary. Canned foods, particularly canned meats and vegetables, as well as dried fruits, are likely to be deficient in vitamines. Canned tomatoes and canned fruits are processed at a sufficiently low temperature largely to prevent the destruction of the vitamines, which are also preserved to a notable extent by fruit acids.

## Irregular Meals

Irregularity in the times of eating is highly injurious for numerous reasons which become at once apparent when one recalls some of the simple facts relating to the physiology of gastric digestion. The stomach normally empties itself in about four hours. When the interval between meals is five hours, the stomach has an hour in which to competely empty and disinfect itself, as well as to recruit the energies of its gland cells to prepare them for the work of digesting the next meal. This is essential for good digestion.

It is also to be remembered that there is a close relation between the eating of food and the normal rhythmic activity of the colon. During the eating of a meal the food residues are moved forward in the colon four times as far as during the hour preceeding the meal. When a meal is omitted, this physiologic stimulation of the colon is lacking and the result may be the failure of the colon to evacuate its contents at the normal time. The resulting accumulation will lead to distention of the colon, and stasis or stagnation may become the starting-point for chronic constipation. Thus regularity of meals is necessary to secure normal rhythmical action of the colon in the evacuation of food residues and other body wastes.

When the interval between meals is shortened, which is likely to occur when meals are taken at irregular hours, the result will be the reception of fresh food into the stomach before the digestion of the previous meal is completed, thus depriving the stomach of rest and so prolonging the stay of the digesting foodstuffs in the stomach as to produce not only exhaustion of the organ but undue congestion of its gastric mucous membrane, from too long contact with the gastric juice and digesting foodstuffs. The ultimate consequence will be gastric catarrh and other disorders affecting the later stages of digestion.

Late suppers are particularly injurious for the reason that they lead to impaired sleep. The late diner usually has no appetite for breakfast, because his stomach is exhausted; and he is very likely to suffer from heaviness, headache and a general feeling of malaise and inefficiency.

The six o'clock dinner is, in the writer's opinion, chiefly responsible for the obstinate insomnia so frequently encountered among city dwellers, especially persons active in business or society.

Insufficient mastication is a fault which has become almost universal because of the general use by civilized people of foods which by cooking have been rendered soft or semi-liquid, and hence require little or no chewing to prepare them for swallowing.

All foods, whether solid or liquid, should be chewed, and it is important to take at each meal a considerable amount of dry, hard food, so that the teeth may be exercised and the salivary glands sufficiently stimulated to provide an adequate amount of saliva, which by proper mastication becomes well mixed with the food and renders material aid in its digestion.

### Drinking at Meals

One glassful of water or other liquid at a meal is quite sufficient to supply all dietary needs. The common custom of drinking several glasses of water or several cups of tea or coffee or other beverages is a common cause of indigestion. Water-drinking does not interfere with digestion by diluting the gastric juice but by overstimulating the glands of the stomach, causing them to produce an excess of gastric acid.

### Food Combinations

Much stress was in former times laid upon the making of proper combinations of foods. Particularly the mixing of fruits with vegetables and of acids with milk was thought to be highly productive of indigestion. Later experience has shown that while some attention should be given to food combinations there is comparatively little ground for anxiety upon this point, provided the foodstuffs eaten are wholesome in character and that all are thoroughly masticated. The various foods harmonize with one another in the liquid state or when reduced to a smooth pulp by thorough chewing. It is, of course, essential that the foodstuffs which enter into a menu should be selected so as to secure a balanced bill of fare; that is, one would not combine eggs with beans, because both are rich in protein, nor olive oil with nuts, for the reason that nuts are rich in fat. Neither is there any occasion for the addition of sugar to oatmeal and other breakfast cereals, or syrup to griddle cakes, for the reason that these foodstuffs consist chiefly of starch, which by the process of digestion is all converted into sugar. Cream or milk or fats are the proper accessories for cereal foodstuffs rather than sugar, the free use of which with breakfast foods is a very common cause of indigestion.

### Highly Seasoned Foods

Highly seasoned foods are overstimulating to the appetite and lead not only to overeating but to over-stimulation of the digestive organs, the result of which is hyperacidity, which is later followed by degeneration of the secreting glands and deficiency of gastric acid. Gourmands are certain to suffer sooner or later from their gastronomic abuses and are especially subject to gastric ulcer and cancer.

### The Use of Condiments

Mustard, pepper, pepper sauce, horseradish, cayenne, capsicum and other hot and irritating substances have no place in the proper bill of fare. These substances all owe their properties to highly poisonous essential oils which in the pure state readily raise blisters upon the skin, and when taken internally, produce similar effects on the delicate surfaces with which they come in contact. Though certain condiments at first stimulate the stomach to increased activity, the ultimate result of the use of condiments of all sorts is lessened gastric activity and irreparable injury to the stomach, liver, kidneys and other vital organs, as the heart and bloodvessels.

### Insipid Foods

Foods which are lacking in flavor, while less positively injurious to the body, are nevertheless objectionable for the reason that they are deficient in the flavoring substances which Nature places in normal foods to render them attractive to the palate, and which through the nerves of taste call forth the glandular and other activities concerned in the process of digestion. To be well digested, food must be attractive. It should please not only the sense of taste but the sense of smell and the sense of sight. This has been clearly shown by the classical experiments of Pavlov.

### A Monotonous Diet

A monotonous diet is objectionable, not simply because it fails to gratify the sense of taste, but because such a diet is likely to be deficient in some of the elements essential to good nutrition. To make sure that the body is abundantly supplied with all the subtle principles which it needs to repair its tissues and sustain its varied activities, a considerable variety in the bill of fare is required. The number of articles taken at each individual meal should not be too great, but they should be varied from day to day. Herein lies the fine art of the expert caterer.

### Indigestible Foods

Such indigestibles as pickles, green olives, rich pastry, preserves and fried foods present to the digestive organs a difficult or even impossible task. Such foodstuffs remain long in the stomach, irritating its walls and exhausting its secreting glands and sometimes causing injury through mechanical irritation; and since they contribute nothing to the welfare of the body, they should be eliminated from the bill of fare.

### Cold Foods

Very cold foods, such as ices, ice cream, and ice water, are questionable as elements of a meal. They may be taken, however, in limited quantity, but should be taken so slowly and in such moderate quantity that they will acquire a temperature near that of the body before reaching the stomach.

### Hot Foods

Very hot foods are objectionable for the reason that excessive heat produces the same injurious effects upon the mucous membrane of the stomach as are produced by the contact of hot objects with the skin. The mucous membrane, in fact, appears to be less able to endure high temperatures than is the skin, being more delicate in structure and less accustomed to such contacts. Dr. William Mayo, the eminent surgeon, has for years maintained that the taking of hot foods and liquids into the stomach is a cause of gastric cancer.

Hot foods are certainly not necessary for good digestion. Wholesome foods taken at the ordinary living temperature are digested with ease by a normal stomach. The taking of hot food is an acquired habit, and one which is certainly not essential to good health.

### Eating When Exhausted

In a state of exhaustion every part of the body is affected. When the brain or the muscles are tired as the result of effort, all the bodily activities are slowed down. The taking of a hearty meal under such conditions is often attended by bad results. Digestion fails for lack of a sufficient amount of active gastric juice, and an attack of acute indigestion is a frequent consequence. Rest, especially sleep, is indicated rather than food, unless the person has been for some hours without food. In such a case the most suitable nutriment will be found in sugar water prepared by the solution of honey or malt sugar in water or dilute fruit juice. Food of this sort is quickly absorbed and immediately appropriated, requiring little or no action of the digestive organs, and hence is best suited to meet the needs of cases of this sort, An exhausted person after resting for an hour or two, may take simple food in liberal quantity.

# Acidosis

Modern physiologic inquiry has clearly established the fact that there is such a condition as an acid cachexia, sometimes termed acidosis. This condition is the result of a reduction of the alkalinity of the blood. The blood never becomes acid except just before death in certain grave disorders, but its alkalinity may be very considerably lessened by an over-accumulation of unoxidizable acids in the body. For example, Bunge and Gautier have called attention to the fact that certain foodstuffs, particularly meat and cereals, contain a very considerable excess of phosphoric and other acids, which tend to lessen the alkalinity of the blood and hence favor the development of arthritis and other maladies which result from this condition.

A normal degree of alkalinity of the blood is necessary to maintain the proper degree of activity of the oxidizing ferments by which the body wastes are consumed and its various metabolic activities promoted. When the alkalinity of the blood is diminished, the action of the oxidizing ferments is prevented, waste matters accumulate, joint disease and other maladies due to what the French writers aptly term retarded nutrition make their appearance. A diet of bread and meat, formerly regarded as an almost typical dietary, is thus shown to be highly objectionable and a certain means of establishing sooner or later a state of arthritism, low vital resistance and general tissue depreciation, leading in the end to arteriosclerosis, premature senility, apoplexy and various degenerative disorders. Rice leaves less residue than any other of the cereals. Tea, coffee and chocolate, because of the purin bodies which they contain, congeners of uric acid, greatly promote the development of acid cachexia.

One of the most objectionable of all the acids of the cereals is oxalic acid, the effects of which are even worse than those of uric acid. Oxalic acid interferes with the gastric digestion, and when taken into the blood, lessens its alkalinity, as it does not readily undergo oxidation and so encourages the development of the acid cachexia. This acid is found ready formed in a considerable number of vegetable food substances.

Oxalic acid is entirely absent from rye, lentils, small peas, cauliflower, lettuce and milk, and is found only in minute and negligible quantities in fruits; while it is present in large amounts in cocoa, chocolate, tea, sorrel, spinach and rhubarb and in small quantities in beans, beets, turnips, chick peas, cucumbers and sweetbreads.

# Milk Diet in Typhoid Fever

For a generation the practice of feeding typhoid fever patients almost exclusively upon milk has, through the recommendation of physicians, become more and more common, until it is now almost universal. The facts given by bacteriological research show most conclusively, however, that this practice is in the highest degree erroneous. Milk is known to be a most excellent culture medium for typhoid fever germs. In view of this fact, it seems strange that any doctor should still persist in prescribing it as an article of diet for typhoid fever patients.

The milk and brandy diet in vogue thirty years ago, and still recommended by physicians who neglect to keep apace with the world's progress in scientific therapeutics, permitted about 70% of the patients to recover. The elimination of brandy during late years has improved the patient's chances, reducing the mortality to about 15%, but a combination of rational diet and treatment is capable of reducing the mortality very much lower, to 2 or 3% at least. There seems no other reason for the popularity of milk as a routine diet in fever cases except its thinness.

For more than twenty years the writer has been thoroughly convinced that the use of milk is objectionable in typhoid cases, and has on this account discarded it. Twenty-five years ago the observation was made that under a milk diet the tongue became quickly coated, sores covered the lips, the breath was exceedingly foul and the bowel discharge putrid. When gruels prepared from barley and other cereals were substituted for milk, great improvement was at once observed, diarrhea was lessened—generally disappearing entirely,—the tongue became cleaner, the sores disappeared and the fecal discharges were far less offensive. The adoption of Liebermeister's suggestion to feed the fever patient fruit soup was followed by the happiest results. Fruit soup, which is highly popular among the Germans, consists of a sort of gruel prepared by boiling for a long time such fruits as dried apples, prunes, figs, etc., straining the juice, and thickening it with corn starch or sago.

# When There Were No Germs

Happy, indeed, was the state of the world before the noisome germs arrived! That germs are among the oldest residents of the earth we know, because Dr. Walcott found them imbedded in the substance of fossil algæ discovered in the ancient rocks of the mountains of Montana.

Professor Moodie tells us that the first germs were harmless organisms, and that they busied themselves with helping to make the great masses of limestone rock which form so large a part of the earth's crust. Dr. Moodie gives us some further interesting information about these early germs. We quote as follows from his article "Ancient Bacteria," in the *Scientific Monthly* for October:

"Disease, however, did not exist with the most ancient bacteria. They were harmless, as are most of the present-day bacteria.

Whether bacterial organisms were instrumental in effecting the origin of disease we do not know. This is a wide field of study which has not yet been explored. In a later geographical period bacteria are found in partially decayed bone, together with thread mold and other types of fungi. This condition, however, cannot be regarded as disease, but decay in dead material. The earliest animals were free from disease, although they were subject to injuries incident to the life of any creature. The larger attacked the smaller, then as now. Infection of the injured part did not take place in the early periods of animal life, and it is only after the great Coal Period that infected wounds are found.

"The Coal Period witnessed the earliest widespread condition of bacteria and fungi, and possibly witnessed the beginning of disease, although there had been previously a mild form of pathology due to the action of parasites. The first diseased conditions preserved are, of course, not the earliest manifestation of disease, since disease is doubtless the result of long ages of struggle between the two contending forces of Nature. The early animals were so highly immune to attack by bacterial organisms that it was only after the race of animals began to grow weaker through age that disease was able to make any headway.

"It is idle to attempt to place a beginning of any limited time during which disease began. Disease was not present in the earliest times of the earth's history, and it did not become very active until the present age of the earth had been attained by nearly three quarters of its duration. That is, disease has only been active during the last one quarter of the earth's history, so far as animals, and birds are concerned. The incidence of maladies began slowly, was introduced gradually, and has been an important factor only within relatively recent times. It was a minor and unimportant factor for millions of years.

"The action of early parasites on the shells of ancient animals presents our oldest evidences of disease. The action of these organisms resulted in the formation of tumors. Diseased conditions of a very interesting type were caused in the early history of animal life by poisoning of the waters in which the animals lived. This resulted in a thickening of the shell, a twisting of the spirals of snails, or a diminution in size of some forms, certain of the depauperized individuals being only one twentieth their normal size.

"The origin and development of disease may be traced to a large extent from the evidences of pathology found on the fossil bones of the ancient races of man and extinct animals, as well as from the associations of the earliest animals. That early man may have acquired some of his diseases from the coexisting animals is evident from the fact that the men of the stone ages, the cave bears, and other cave-inhabiting animals were often afflicted with the same maladies, as may be seen from the diseased appearance of their bones.

"It would thus seem that the relation between disease in ancient times and the extinction of great groups of animals like the dinosaurs, was a matter of minor importance. The indications of disease so far seen on ancient bones are the result of accidents, or minor constitutional disturbances which did not endanger the life of the race and seldom that of the individual. The evidence, to be sure, is scanty, being confined to that seen on the hard parts of ancient animals. But on a similar basis is erected our present extensive knowledge of the evoluton of animals in past time. Many of the epidemic diseases of today which are so fatal to life leave no traces on the bones. It may have been so in past times, to a great extent.

"The beginnings of disease are thus seen to be lost in an immense obcurity of time, during which the evil forces of Nature were battling with the good for supremacy. Immunity doubtless was early established, and strongly entrenched. So firmly guarded were the primitive animals of the first ages of the earth that no disturbing influences entered into their existence. Only when racial old age, and the introduction of other antagonistic influences disturbed this natural immunity did animals see the new factor of disease enter into their lives. Early land animals doubtless lived long lives of placid contentment, undisturbed by fear of infection either from within or without. Disease was in its very beginnings, and with the land animals spread more and more over the face of the earth as time passed on in a mighty succession of geological ages."

# The Remedy

In his haste to become civilized, man has neglected to provide compensations for the departure from the normal conditions of life which civilization necessarily involves. We need not become savages to be healthy; but we must see that the air we breathe is as clean as that which the savage breathes, that the food we eat and the water we drink is as wholesome and pure. We must give our pale skins more contact with the sun and air, and must keep the inside of our bodies as clean as the outside. We must cultivate *clean* blood instead of blue blood. Society must establish laws and sanctions which will check the operation of heredity in the multiplication of the unfit. Eugenics and euthenics must become dominant matters of study and concern. We must cultivate health instead of disease, as we have been doing for 6,000 years or more, and we must rally the moral and social forces of the world to labor earnestly for race regeneration.

In biologic living will sometime be found the panacea for which the world has sought for centuries. Said Seneca, "To live naturally is to live happily."

# The Nobility of Health

Health is a great matter, both to the possessor of it and to others. On the whole, that humorist in the Moral Essay was not so far out, who determined on honoring health only; and so instead of humbling himself to the high-born, to the rich and well-dressed, insisted on doffing his hat to the healthy. Coroneted carriages with pale faces in them passed as failures, miserable and lamentable; trucks with ruddy-cheeked strength dragging at them were greeted as successful and venerable. For does not health mean harmony, the synonym of all that is true, justly ordered, good; is it not, in some sense, the net-total, as shown by experiment of whatever worth is in us? The healthy man is the most meritorious product of Nature, so far as he goes.—*Thomas Carlyle; Essay on Sir Walter Scott.*

J. H. Kellogg.

# Corn Grinding in Ancient Peru

CHAS. W. MEAD
Assistant Curator American Museum of Natural History.

Indian corn or maize (Zea Mays, Linn.) is of American origin. After the discovery by Columbus it quickly spread to other parts of the world, and is in the foremost rank of the world's foods.

In prehistoric times in North America maize was the staple food of the Indian tribes in the eastern half of the United States, the region of the Pueblo dwelling peoples in the southwestern section, and down into Mexico. In South America the western part from the extreme north well down into Chile was the area of its most intensive culture.

The milling of corn whether done with mortar and pestle or by grinding between two stones was a slow process and occupied a large part of the time of the women.

Corn furnished both victuals and drink to the early Peruvians. From it they made a kind of hard bread. A favorite way of preparing it was to parch it and then reduce it to meal. This was carried on journeys in bags, and when hungry the travelers took a little of it with a swallow of water. These bags are often found in graves with the mummies. The present Peruvian Indians are as fond of this food as were their ancestors one thousand years before the coming of Columbus. Garcilasso de la Vega, the old Inca historian, thus describes one of their dishes: "They made a kind of Hasty-Pudding called *Api,* which was a great dish amongst them, and which they ate with much delight; but this was esteemed high feeding, and was not common at every meal."

When Pizarro began the conquest of Peru (1532) the common drink of the country was a sort of beer made from maize, and it is the national drink of the Indians today. Maize is soaked in water until it sprouts. It is then ground and boiled, and stored away till it ferments. When they wished to make a particularly fine brew, the kernels were chewed by the old women instead of being ground.

It does not appear that the ancient Peruvians used any implement that could be called a plow. They made holes for the seed with a stick that was sometimes pointed with copper or bronze. These metal points were shaped like a large chisel and were made with a socket into which the stick was driven. Corn was planted in hills or in long furrows, various manures being used, usually a small sardine-like fish that visited their coast in immense numbers.

In the coast region, where rain is all but unknown, the only water supply was the small rivers that come down from the Cordilleras, and some of these were dry a part of the year.

Long before the time of the Incas the Peruvians irrigated their fields by means of aqueducts from rivers at a considerable distance. These ancient works show such engineering skill that they excited the wonder and admiration of all the early chroniclers. One of the best preserved is near Chimbote. The region surrounding the extensive ruins is barren and desolate. The ancient population irrigated it by means of an aqueduct from the river Santa, sixteen miles distant. The greater part of this fine work still exists, and is computed to have a capacity of supplying sixty million cubic feet of water daily.

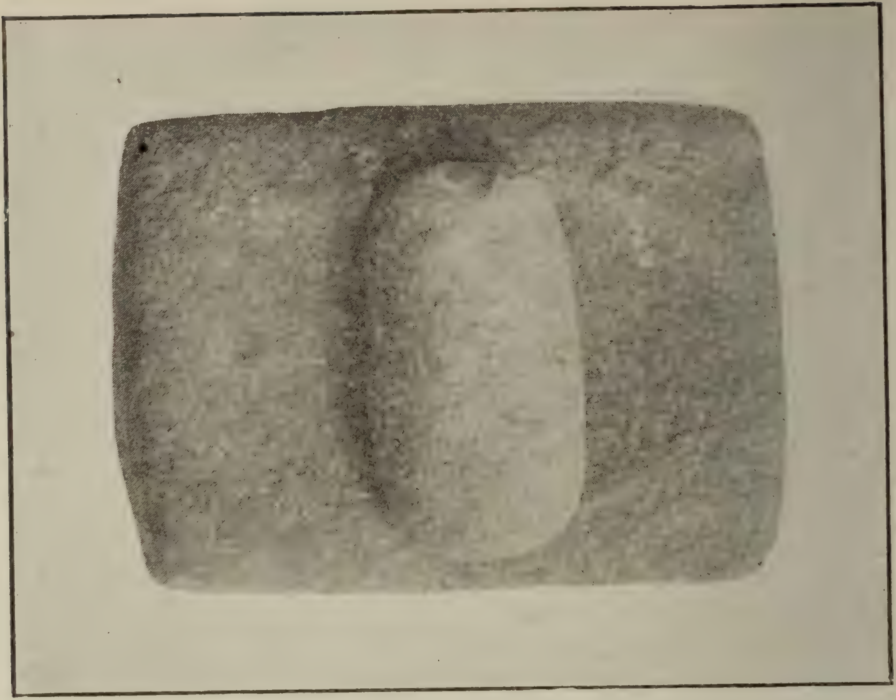


Fig. 1. Ancient Aztec Corn Mill (Metlatl)
(Photograph from American Museum of Natural History)

The photographs accompanying this article were taken from stone objects in the archæological collections in the American Museum of Natural History, New York. They show three ways by which the ancient Peruvians ground their corn.

Fig. 1 shows the most common form of handmill. It consists of a flat stone which is commonly called a metate (Aztec, *metlatl*) and a muller or handstone for crushing or rubbing. The woman kneels beside the metate, and grasping the muller with both hands, forces it back and forth until the grain is reduced to the desired degree of thinness.

Fig. 2 is a mortar and pestle, and requires no particular description.

In Fig. 3 we see an ingenious contrivance for grinding, a large, flat stone upon which the corn was placed, and another heavy stone which has a rounded edge for the handstone. This last was set up with its rounded edge on the

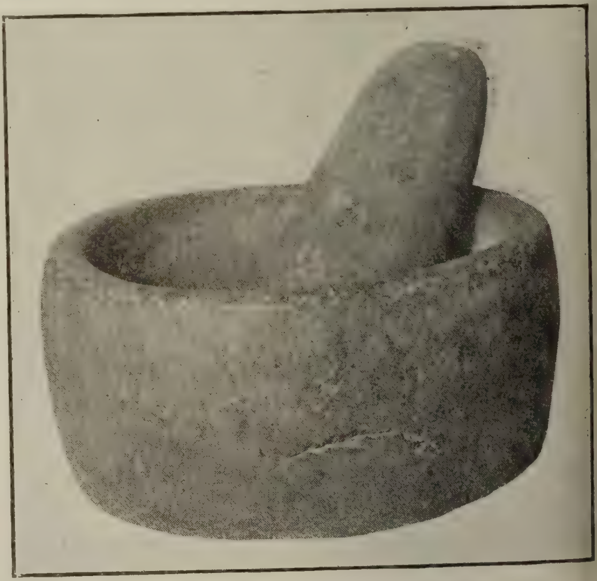


Fig. 2. Ancient Peruvian Mortar for Grinding Corn
(Photograph from American Museum of Natural History)

corn and rocked back and forth. This process does not require half the expenditure of strength necessary in either of the other methods described. The collector for the museum who excavated this "mill" from an ancient burial place, used it every morning for several months in grinding his coffee, and found it to do the work perfectly.

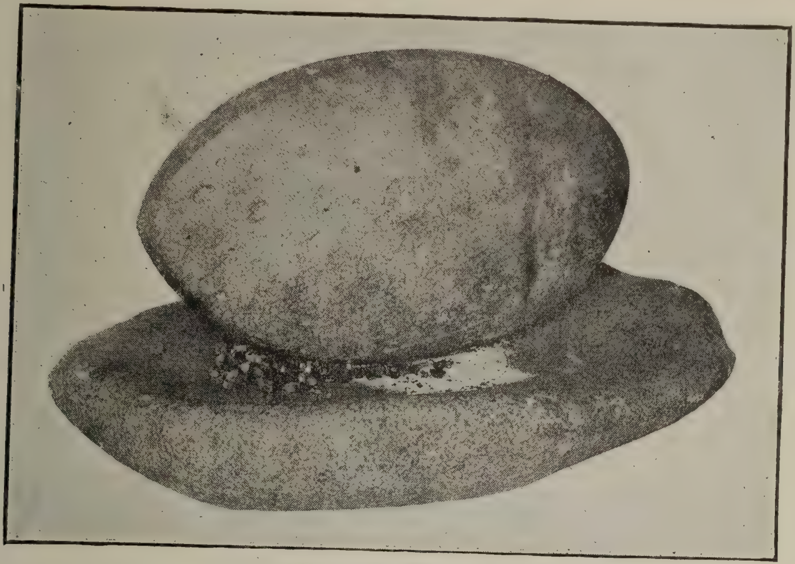


Fig. 3. Stones for Grinding Corn
(Photograph from American Museum of Natural History)

# Ill Health and Long Life

HENRY M. STEGMAN

*(Continued from November)*

### Alexander Pope

Alexander Pope did not attain a great age, but his struggle against ill health is full of encouragement to those who are under the same disability. Between his twelfth and seventeenth years, excessive study undermined his constitution to such an extent that he expected soon to die. He obtained the advice of a famous physician, John Radcliffe, who prescribed diet and exercise. The youthful poet recovered his strength and spirits. The deformity developed in his years of over-application, however, was permanent and had an unfortunate effect on his outlook on life. He was not a loveable character, but he was an untiring worker. In his translations of "The Iliad" and "The Odyssey," he had assistance, it is true, but the products of his pen were so voluminous as to show that the fetters of ill-health do not prevent large accomplishment.

### Elizabeth Barrett Browning

Elizabeth Barrett Browning, like Pope, did not reach old age, dying at fifty-five. In childhood she had a spinal affection and her lungs became delicate. At about the age of thirty, she broke a blood vessel and was for ten years an invalid. Much of this time she was confined to her room. Her condition grew so much worse that she was taken to a winter resort at the seashore, where she remained three years. Her favorite brother lived with her here, and his death by drowning was such a shock that it nearly proved fatal to her. At the age of forty, she became somewhat better, and contracted that runaway marriage with Robert Browning which is the great romance of English literature. Three years later, she became a mother. Ill health did not sour her disposition, as it did that of Pope and Carlyle. Her pen was ever ready in the service of humanity and her "Sonnets from the Portuguese" will be read by lovers as long as the English language lives.

### Thomas Carlyle

Thomas Carlyle cannot be quoted as an apostle of sweetness and light under affliction. What sympathy we should be inclined to give him for his long suffering from dyspepsia and insomnia is tempered by his treatment of his wife and his persistent irritability and gloominess. But he is another proof that ill-health is compatible with tremendous literary productivity and longevity. He attained the age of eighty-five.

### Herbert Spencer

Herbert Spencer likewise had almost a life-long battle with physical disability, and likewise became an octogenarian, dying at eighty-three. The story is that as a boy he ran away from school and was more than a day and a night in reaching home. Exposure to the elements and extreme fatigue caused a breakdown from which he never wholly recovered. However, he set about methodically and resolutely to overcome or rather to minimize this tremendous handicap. He found out how many hours or even minutes a day he could work without bad effects, and stuck closely to his schedule. His writings required a vast amount of preliminary reading, the more so as his masterpiece, "Synthetic Philosophy," was designed to cover the whole field of scientific knowledge. In 1860, he drew up a plan of what these ten volumes were to contain. His physical disability constantly impeded him, but thirty-six years later he finished his great task.

### Leo Tolstoy

Leo Tolstoy, greatest of Russian intellectuals, had several experiences of physical collapse, which compelled him to forsake his wonted occupations. His situation was that of the man who at first had no time to think about his health, and in consequence, later had no time to think about anything else. Yet his life was full of activity, both of body and mind, and his death at the age of eighty-two was due not to the wearing out of the machine but to pneumonia, which may be regarded in the light of an accident. His idle, dissipated life at the university told on his health, and when nineteen, he gave up his studies to retire to the open-air life of his estates. Fifteen years later, his labors as an arbitrator to carry out the provisions of the law emancipating the serfs, again left him unable to cope with the business of life. He withdrew to Southeastern Russia for a "koumyss cure," revelling, as he said, in the life of a beast of the field. Restored to his former vigor, he again plunged into his writings and reforms, so that in another eight years he had once more to recuperate with a "koumyss cure" and life in a tent. After another interval of study and efforts to ameliorate the condition of the peasants of the land, he found himself, as he thought, in a dying state. Years before he had had a bitter quarrel with his eminent brother novelist, Turgeniev, and now he wrote to him his desire for a reconciliation. Peace was made between them, but contrary to his forebodings Tolstoy lived thirty-two years longer. Part of that time he worked as a peasant or shoe-maker, confining himself to a vegetarian diet.

### Robert Louis Stevenson

Robert Louis Stevenson did not achieve length of years, but he will ever be the patron saint of invalids as well as of many persons of robust vitality. His biography tells of a succession of attacks of ill health, beginning in early childhood, and of journeys undertaken to mitigate them. Amid our Adirondacks he found some surcease of suffering, and finally in the breezes and sunshine of far-away Samoa, he seemed to discover the ideal habitat for his frail frame. Such an improvement took place in his condition that a considerable period of usefulness apparently lay before him. A stroke of apoplexy, however, ended his career at forty-four, but he had accomplished more than a strong man's work while in the throes of his baffling diseases. Apart from their mere literary value, his writings are sermons on courage, manhood, honesty, cheerfulness and love of fellow men. In them there is no trace of bitterness due to disappointment or suffering. Familiarity with his life will always be an uplift to those in ill-health, and should bring a sense of shame to us when we lose kindliness, good spirits and faith under the "bludgeonings of fate."

Stevenson's close friend, William Ernest Henley, owed much to having been an inmate of a hospital in Edinburgh at the age of twenty-five. He there began his literary career with various poems describing his sick-room experiences. The brilliancy of these contributions attracted the attention of the editor of the magazine to which they were sent, and he called on Henley, taking Stevenson with him. The two young men became great friends and later collaborated in several plays.

### Ralph Waldo Emerson

If we turn again to our own land, we find that Ralph Waldo Emerson might have added a page to his essay on "Compensation" from his own experience with ill-health. His studies in the divinity school were interrupted by sickness. When at the age of twenty-three, he was licensed to preach, he was threatened with consumption and had to make a long journey South. Some years later, after the death of his first wife, his condition was so feeble that he went abroad, making the long, slow voyage to the Mediterranean. For nearly forty years after his return, he was engaged in lecturing. This meant constant travel and exposure to all kinds of weather. Yet he lived to be seventy-nine.

### William Cullen Bryant

So unusual and notable is the health story of William Cullen Bryant that more than a mere passing mention must be made of it. There is the background of weakness at birth and a constitution that was always delicate; yet in the foreground we see a large achievement in law, journalism and literature. When he began the practice of law, he himself says he was wasted to a shadow by a complaint of the lungs. Yet for more than half a century afterwards, he was engaged in severe journalistic work nearly all the time, as the editor of the *New York Evening Post,* in addition to his literary work, which included the translation of both "The Iliad" and "The Odyssey." When he died, at eighty-four, he had never been incapacitated by a day's illness. This record was a deliberate achievement, due to daily practices which few men have the courage to carry out.

The young poet, for at the age of ten he made a rhymed version of the first chapter of Job, was fortunate in having a father who was both a physician and a believer in natural methods of healing. A young man who studied medicine in the office of

Dr. Peter Bryant left a record that William was so delicate and nervous as an infant that there seemed little likelihood that he would attain adolescence. But his father believed in the curative powers of cold water, and had some of the medical students of his household give the young child a dip in a spring near the house early every summer morning. This treatment was continued so late in the fall that sometimes it was necessary to break the thin ice on the water.

Bryant himself tells in a letter how he circumvented the powers of disease:

"I rise early, at this time of the year (March) about half past five; in summer half an hour or even an hour earlier. Immediately, with very little encumbrance of clothing, I begin a series of exercises, for the most part designed to expand the chest and at the same time call into action all the muscles and articulations of the body. These are performed with dumbbells—the very lightest, covered with flannel—with a pole, a horizontal bar and a light chair swung around my head. After a full hour, and sometimes more, passed in this manner, I bathe from head to foot. When at my place in the country, I sometimes shorten my exercises in the chamber and, going out, occupy myself with some work which requires vigorous action. After my bath, if breakfast is not ready, I sit down to my studies until I am called. My breakfast is a simple one—hominy and milk, or in place of hominy, brown bread or oatmeal or wheaten grits, and, in season, baked sweet apples. Tea and coffee I never touch at any time; sometimes I take a cup of chocolate, which has no narcotic effect and agrees with me very well. At breakfast, I often take fruit, either in its natural state or freshly stewed.

"After breakfast, I occupy myself for a while with my studies ,and when in town I walk to the office of the *Evening Post*, nearly three miles distant, and after about three hours return, always walking, whatever the weather or the state of the streets. In the country I dine early, and it is only at that meal that I take either meat or fish and of this but a moderate quantity, making my dinner mostly of vegetables. At the meal which is called tea, I take only a little bread and butter, with fruit if it be on the table. In town, when I dine later, I take but two meals a day. Fruit makes a considerable part of my diet, and I eat it almost any hour of the day without inconvenience. My drink is water, yet I sometimes, though rarely, take a glass of wine. I am a natural temperance man, finding myself rather confused than exhilarated by wine. I never meddle with tobacco except to quarrel with it."

Shortly before his death, some one asked him if he had reduced his allowance of morning gymnastics.

"Not the width of your thumbnail," replied the octogenarian. His hearing and sight were still perfect. He was eighty-four when he died. Upon finishing an hour's address in a blazing sun, he became faint. In falling, he struck his head with fatal results.

### Donald G. Mitchell

Donald G. Mitchell was a star of the second magnitude in American literature. Under the name of Ik Marvel he wrote two books which have been widely read and have given much pleasure and delight. They are "Reveries of a Bachelor" and "Dream Life." He was also the author of books of travel, essays and historical and literary studies. After being graduated from Yale, he studied law. The state of his health was such, however, that he felt that a strenuous city life meant an early death. Reluctantly he gave up the career which was nearest his heart and settled down in a rural home. He did not allow his mind to lie fallow, however, and took up the study of agriculture and landscape gardening. His was a placid yet purposeful existence, and he achieved the longevity for which he had abandoned the law and the city. His death occurred at the age of eighty-six.

### Horace Fletcher

The fame of Horace Fletcher went into eclipse, and the notice of his death not many months ago merely recalled to people that he had originated some sort of chewing fad. Yet he made important contributions to science, especially in showing to a meat-eating generation the benefits of a low protein diet. It is true that the value of his discoveries was obscured by some wholly wrong ideas which he promulgated, yet he will serve to point a moral in our present line of inquiry. In middle life he was rejected by a life insurance company, being in a wretched state of health. Yet by a persistent control of his dietetic habits he soon wrought a change which almost justifies the use of that often misused word —miraculous. At the age of fifty, he rode 190 miles in one day on his bicycle—with an additional fifty the next morning before breakfast. No ill effect followed this achievement. In the Yale gymnasium he performed feats beyond the power of the best athletes. The early promise of his doctrine has not been fulfilled, but he is certainly one of those who after being "down and out" physically, became very much "up and in."

### Dr. Edward Livingston Trudeau

Our final torch-bearer of civilization who rose superior to the limitations of disease is Dr. Edward Livingston Trudeau, who for forty years fought tuberculosis not only in his own frame but in behalf of his fellow-sufferers. When he went to the Adirondacks as a young man, he was a seemingly hopeless invalid. As he regained some measure of health, he determined to devote his life to the service of those afflicted with pulmonary troubles. The great tuberculosis sanitarium which he founded in the mountains was the pioneer of a wide circle of these institutions; and knowledge gained by obervations and researches there are utilized by physicians all over the world. When at the age of sixty-seven, he at last succumbed, he was mourned by thousands whom he had helped over the rough places of disease. Twelve hundred of his former patients built a monument to his memory. As a striking proof of the efficacy of his skill, mention is made of the fact that at one time in the late war, one hundred of the "graduates" of his sanitarium were serving in the army and navy of the United States. His life is a luminous example of how the mischance of an individual may be turned into a boon to the human race.

### Summing It Up

It is not necessary to draw morals from these narratives; the morals stand out self-indicated. Obviously they prove that early ill health or even continued weakness may be overcome by rational living; that a frail physique may do a giant's work.

It should, moreover, be borne in mind that the man in failing health today has a vast advantage over his fellows of former times in the progress which has been made by medical science. The one horse shay, you remember, was troubled "with nothing local, as one may say, but a general flavor of mild decay," and it went to pieces in every part at the same time. But when an individual has what is called a general breakdown, there are specific causes for this in one or more parts of his body—usually more. Today he can have an exact diagnosis made with instruments and methods which were unknown a generation ago.

Frequent laboratory tests will tell him accurately how these measures are helping toward regeneration. And all this will be in addition to those natural curative agencies of fresh air, exercise and rest which have been known for centuries and are now valued more highly than ever before.

That passage in Proverbs concerning wisdom contains a profound medical truth in the words: "Length of days is in her right hand."

# American-Made Toys Forge to the Front

In less than six years, the toy-making business in the United States has increased more than $25,000,000, while during the same period the imports of foreign made toys has decreased by approximately $3,000,000.

According to an article which recently appeared in "Advertising and Selling," in 1914, toy manufactures in the United States amounted, in round numbers, to between $10,000,000 and $12,000,000 as against $7,500,000 in imports from abroad. During the ten months preceding April 1, 1920, the importations amounted to $1,690,242 in dolls and $2,616,189 in other toys, whereas the present annual domestic production has a wholesale value of about $35,000,000.

There is a potential market for toys with 24,000,000 white boys and girls in this country. The toy manufacturers of the U. S. have raised the toy business to the position of one of the greatest and most favorably known industries in America. But they will never be satisfied until they have made America the world's market for toys.

The American Red Cross is contributing to this "American-made toys" propaganda. Thousands and thousands of toys made by American children have been shipped to Europe for distribution among the little war-waifs. The first ship-load of gayly painted animals and dodo birds in wood, of trick elephants and dolls, of trains and automobiles and aeroplanes, of wooden soldiers and jumping jacks, went overseas in March, 1920, followed in May by another big cargo.

It is not only Junior toymakers who through the Red Cross have invaded the centuries-old craft world, turning out products which rival the famous Nuremburg toys of pre-war reputation. Soldiers and sailors whose disabilities keep them in the Public Health and army hospitals are making attractive toys. An appeal recently appeared in the papers for tin cans for the patients at Fox Hills, talcum and tobacco boxes, cocoa tins etc. In the occupational therapy department, tanks, battle ships, traffic policemen and automobiles have been made from these discarded tins. These toys are very complete and most ingeniously constructed. The automobiles, for instance, are equipped with tool boxes for the running boards made from the hinged tops of the tobacco cans.

# Winter Quarters for Vegetables

R. V. ASHLEY

About the first of December the kiss of old Boreas becomes a savage bite and the leaves which have clung tenaciously to the trees now curl and fall to the ground; tender things in the garden are blackened, and droop as before a fierce blaze; and even the bare earth, which before has been mellow and soft to the touch, becomes as hard and unyielding as granite.

It is all important that before the earth freezes up, the unused products of your garden should be stored so that they will be protected from a degree of cold that would impair their flavor or ruin them altogether. They must be kept in finest condition for your table throughout the winter.

With a little forethought and care a number of delicious vegetables and fruits (which are not usually thought of as products that can be kept after the ground freezes) may be successfully stored.

Winter storage of vegetables does not mean in all cases that the vegetables must be lifted from the ground and placed in cellar or storeroom. Certain vegetables may best be left in the ground protected with straw or leaves, and lifted a few at a time when wanted for use. Others may be lifted and placed in the cellar, while still others must be given special conditions in the cellar, in order to preserve their succulent and flavory properties.

### Artichokes

Artichokes are supposed to be somewhat difficult to keep for winter use because the roots have a tendency to shrivel as soon as they are exposed to the air. On this account only sufficient roots of the Chinese or Japanese varieties should be dug for immediate use. The others should be left in the rows, and the rows should be covered thickly with coarse litter, leaves or straw, before the ground freezes. With this protection the roots may be dug for use all winter.

The tubers of the Jerusalem Artichoke may be dug late in the fall, if desired for use during the winter, and placed in a pile in an elevated situation which will furnish good drainage, covered first with a little sand, then with six inches of clean straw and six inches of soil over the straw. When the soil freezes to a depth of one inch the pile should be again covered with sufficient straw to prevent further freezing. The pile should be in the form of a cone, or at least with a center ridge, in the top of which is placed a drain pile to provide for ventilation. A place is left at one side of the pile through which the roots can be extracted as desired for use. This opening, however, must be carefully covered to protect the roots from frost.

### Beans

Bean pods may be fully dry while the beans inside are still green and moist. The dry pods should be removed and spread out in a thin layer on the floor in a dry, well-ventilated room. A little artificial heat will hasten the process of drying. A light airy cellar with a cement floor and some heat furnishes an ideal place. When the beans are removed from the pods and thoroughly dried, they should be placed in cloth or paper bags and suspended in mid-air from the ceiling. When thoroughly dried, beans are not harmed by frost.

### Beets

Beet roots may be treated in the same way as described for Jerusalem Artichokes. It is not necessary to retain all the leaf growth, but on the other hand, the leaf growth must not be entirely removed. The leaves should be cut, or broken, off about one inch from the top of the roots. Another excellent method of storing beets is to place them in cellars preferably with a dirt floor. The tubers may be placed by layers in boxes, each layer being covered with moist garden soil. The moisture in the soil is usually sufficient to keep the roots in fine condition until late spring. Stored in this way the beet roots will be as succulent and tender when used as though just taken from the garden. Such beets are entirely different from the hard, dry, woody roots which result from careless storing and which we often find in the market during the winter.

### Celeriac

The roots of this uncommon vegetable are little used, but make a delicious dish, which should be better known to Americans. The roots may be stored in the manner described for beets.

### Swiss Chard

This plant belongs to the beet family but does not produce an edible root. It is used for its green leaves, that are very tender and of excellent flavor. For winter storage the plants may be cut to within six inches of the ground. The roots should then be carefully lifted and replanted in a cold frame. From the cold frame a cutting may be had at least once a week throughout the winter. If you have no cold frame, cut off the tops of the plants as before, then draw the earth up on both sides to a depth of six inches and when freezing weather comes, cover the hole with a deep layer of straw. Early in the spring remove the straw, draw away the earth, and the plants will quickly start into growth and produce fresh tender greens two months before they could be had from spring-planted seeds.

### Brussels Sprouts

It has been quite generally supposed that this vegetable could not be kept successfully for more than a few days. But in certain sections Brussels Sprouts are kept all winter. It is done in this way: The roots are lifted before frost and planted with plenty of soil in peach baskets, then placed on the floor of a cellar which has natural soil for its floor. The delicacy of this vegetable makes it well worth while to go to considerable extra labor in order to prolong its season.

### Cabbage

There is only one proper method of storing cabbages. Dig a pit two feet deep and large enough to hold the cabbages to be stored. Line the bottom and sides with six inches of straw or coarse litter. Put in a layer of cabbages, heads down, then six inches more of straw and another layer of cabbages and continue until the pit is full; then cover with earth in such a manner as to form a mound with a peak or point at the top in which is placed a tile to provide ventilation. Leave an accessible opening through which the cabbages may be removed as wanted.

### Carrots

Carrots should be treated exactly like beets, except that it is not necessary to leave any of the leaf growth attached to the roots.

### Celery

There are numerous methods of storing this crop which now is considered almost a necessity for winter use. One of the simplest methods is to store it in the garden, either where it grows, or by transplanting it in rows sixteen inches apart, placing the stalks as close together as possible in the rows; then place twelve-inch boards on either side of the rows of celery, slanting inwards over the plants. The boards should be supported by stakes driven into the ground. Bank up earth against the boards, packing it solidly; then remove the boards by carefully and slowly lifting them upwards. This will allow the earth to fall in against the celery without falling between the leaves of the plants. The tops may be left open until there is danger of severe freezing. Then they may be bent over and covered with a little soil. After the soil covering is frozen an inch deep, the rows should be covered with sufficient straw to prevent further freezing. By this method celery may be kept in perfect condition until April. Another way is to remove the plants, roots and all, and set them close together on the dirt floor of a vegetable cellar or in boxes with a little soil about the roots. The roots should be kept just moist enough to keep the plants barely growing. Care must be taken that no water gets on the leaves or stalks as this will cause the stalks to rot.

### Corn Salad

This may be left standing where it grows, but it should be covered with three or four inches of straw before freezing weather comes. The leaves can be picked under the straw throughout the winter.

### Cauliflower

This vegetable grows best during the cool months of the year and then it usually comes on all at once. It may be kept well by a simple method. When the heads are in prime condition, lift the plants, roots and all, tie a heavy cord to the roots and hang the plants bottom upwards in a dark cool place. Cauliflower may be kept in good condition until January or later by this method.

### Kale

Kale is perfectly hardy in most Northern sections. Its quality is improved by frost. Where the winters are severe it may be slightly protected by a loose covering of straw. The leaves may be picked for greens at any time during the winter.

### Onions

Onions may be tied together in bundles by their stalks and allowed to hang in mid-air in a dry cool room, or they may be treated like beets; but they may be allowed to freeze, as they are said to be best when frozen solid. However, they must not be allowed to freeze and thaw alternately. They may be kept also by spreading out in thin layers on shelves in a moderately cool, dry cellar.

### Parsley

This is one of the easiest of plants to keep for winter use. Late in the fall put six roots into a six-inch pot, after first cutting off one-third of the length of the roots. Before planting pull off all the leaves but the two center ones, removing the leaves with a downward motion so as to take off the entire leaf stalk clear to the root. After planting, water the roots and set them away for a few days in a dark place until growth begins. Then the plants may be placed in a light window where they will continue to grow during the entire winter. When pulling the leaves for use, always pull them off with the downward motion described, as any stalks left on the plant are likely to rot and cause the entire plant to decay.

### Parsnips

These may be left in the ground where they are grown, usually without protection of any kind. It is well, however, to give them a slight protection with straw. If they are grown in heavy soil, a trench should be made on either side of the row to provide drainage; otherwise the roots are likely to rot. Again the roots may be removed from the ground and stored like beets, but should first be allowed to freeze as this greatly improves their flavor.

### Radishes

Winter radishes should be stored in sand or in garden earth in the same manner as beets.

### Salsify or Vegetable Oyster Plant

This root crop may be treated like parsnips or exactly like beets. The roots, like those of the parsnip, are better flavored after having been frozen.

### Spinach

If you have planted in August the hardier varieties of winter spinach, simply cover the plants with straw before freezing weather and you will be able to pick the leaves during the winter, even under the snow.

### Squash and Pumpkin

These should be handled very carefully as a slight bruise is likely to result in decay. They should be stored in an even temperature of about 50° F. in a dry place. They will not keep well in either a very hot or a very cool place.

### Potatoes

Potatoes cannot stand much frost and they will not keep well in moderate heat. They keep best in a constant temperature of 40° to 45° F. If you have a cold cellar so arranged that you can keep it frost proof, the potatoes may be stored there in boxes, bins or barrels. If you have no cellar or if your supply is greater than can be stored in your cellar, they may be stored outside in a pit which may be prepared as follows:

Dig a pit twelve inches deep, three feet wide and as long as necessary to hold your supply. The sides and bottom should be lined six inches deep with clean straw. Fill the pit with the potatoes and make the pile with sloping sides so as to form a peak in the middle of the pile. In the center place a two-inch drain tile which should be allowed to extend into the center of the pile of potatoes. This will protect them from freezing and provide ventilation. Cover the entire pile with straw, then with eighteen inches of soil. Allow the soil to freeze to a depth of one or two inches, then cover with six inches more of straw. At one end of the pile place a board or two for a door and cover with plenty of straw instead of earth to prevent freezing. If you have a great quantity of potatoes, they should be stored in several small pits rather than in a single large one.

### Putting Your Garden at Rest

Having completed the storing away of garden products to supply your table with home-grown staples and dainties during the winter, you should give attention to putting your garden to sleep.

The perennial border should be neat and clean. Old flower stems and dead growth and all weeds and rubbish should be removed to the compost heap. Then after the ground freezes, the plants should be covered with four to six inches of straw. In the case of peonies, the crowns should be covered with a foot of manure as these plants are heavy feeders. Some of the more tender of the perennials, such as the Buddleia, should have their crowns covered with six or eight inches of earth heaped over them in the shape of a cone. This is not only to provide winter protection but to insure good drainage. Poor drainage is much more often a cause of winter killing than cold weather.

Biennials and hardy annuals are best protected by transplanting to the cold frame with glass and mat coverings.

The several classes of roses need different treatment. Hybrid perpetuals require no protection, but should be sparingly pruned leaving sufficient wood to provide for further trimming in the spring. Hybrid Teas should have the old wood cut away and about three or four inches clipped off of the new growth, and then earth to a depth of six to eight inches should be heaped about the plants in cone shape to provide both protection and drainage.

The only way to winter over the Hybrid Teas is to dig a trench eighteen inches deep, lift the plants and literally bury them in the trench.

In the vegetable garden all top growths, weeds and rubbish should be removed and placed on the compost heap. Then the ground should be roughly turned, if possible after a thorough fertilizing with coarse stable litter, and left in a rough condition all winter. This will enable the frost to reach every particle of the top soil, and the result will be not only to put the soil into prime condition for spring working but also to kill myriads of insects which have burrowed into the ground to spend the winter in hibernation.

With your garden crops safely stored away, your beds and borders carefully protected and the cleared ground clean and neat, you may rest content in happy satisfaction at having raised a successful garden and with the pleasant thought that next spring you will be already well on the way to a good garden when the first balmy days and frost-free ground send forth their strong appeal to the out-of-doors and the miracle of a new cycle of vegetable life again unfolds before us.

# Results of a Research on Tobacco

[A few years ago M. Abel Gy, of Paris, France, made a special and very extensive research respecting the effects of tobacco upon animals and human beings as his thesis for the Doctorat in Medicine. The research was carried on in the laboratory of M. Robin, one of the leading physicians of Paris. This elaborate work presents most positive evidence of the poisonous properties of tobacco. Not only in huge doses, but in small quantities, it has a destructive influence upon human life. The editor has prepared a translation and abstract of this remarkable research, for the benefit of GOOD HEALTH readers, which will appear in this and following numbers of the magazine.]

## The Toxicity of Tobacco

Tobacco contains a volatile alkaline, nicotine, in proportions of two per cent to eight per cent.

The amount of nicotine increases with the age of the plant.

Ordinary tobacco as prepared for use contains less nicotine than the raw material.

Its usual nicotine content is 2 to 2.5 per cent.

A cheap cigar contains 1.5 to 2 per cent. A higher priced cigar contains a little more nicotine.

Later studies of tobacco have shown that it contains numerous other poisons besides nicotine—among others, prussic acid, collidine, thiotetrapyridine, isodipyridine, nicotelline, nicoteine, nicotinine, and pyrroline.

Nicotin is one of the most violent poisons, comparable to aconitine or prussic acid.

According to Orfila, two drops of pure nicotine killed a dog of average height. Goats, however, are able to eat tobacco apparently without injury.

According to Roger, 7 milligrams of a .05 per cent solution of nicotine killed one kilogram (2.2 lbs.) of rabbit by injection into a vein.

Lewin and Pouchet found that one-fourth of a drop will kill a frog and two drops a dog; but a dog may be made accustomed to the poison until three drops are required to kill it.

According to Vibert the cat and the rabbit are killed by one-sixth of a drop, a dog one-half drop to two drops.

According to Leblanc a horse is killed in four minutes by eight drops.

Planas showed that the poisonous properties of nicotine are very rapidly and strongly manifested when it is applied to the rectum or to the conjunctiva.

According to Guinier, death occurs most rapidly after application of the poison to the trachea.

It is commonly said that one drop of nicotine is sufficient to kill an adult.

Dr. Gy prepared pure nicotine by adding to the nicotine of commerce, pulverized oxalic acid, forming a liquid solution of oxalate of nicotine. This was washed with ether, then was decomposed by the addition of potash and again washed with ether; and by distillation pure nicotine was obtained which was found much more powerful and uniform in action than the commercial product.

A glass rod dipped in this nicotine was applied to the throat of each of three young cats. The effects were the same in each. Within six seconds the cats suffered from dyspnea and dragged the hind legs. Then general convulsions occurred. The sphyncters were relaxed, froth appeared at the mouth, and at the end of fifteen seconds death occurred.

One drop of nicotine was applied to the eye of a white mouse and the eye of a sparrow. Both animals died instantly.

One-fourth dram of a one per cent solution of nicotine (one-seventh drop) was injected under the skin of a guinea pig weighing 830 grams. At the end of a minute the animal began to suffer from dyspnea. It fell flat upon the floor, general convulsions occurred for a minute, then partial paralysis of the hind legs and trembling of the fore legs. Death did not occur. The same dose was administered two days later and on the third day and the fourth day following, with the same effects. On the fifth day the animal died at the end of a minute with general convulsions. Microscopic examination showed fatty degeneration of the liver and congestion and dilatation of the convoluted tubules and glomerules (inflammation) of the kidney. There were also other evidences of tissue disintegration.

A rabbit weighing 1510 grams (3½ pounds) received one c. c. (fifteen drops) of a one per cent solution of nicotine. The animal became very dyspneac and partially paralyzed in its hind legs. Three days later the same amount of nicotine was injected, with the same results. Twenty days after the first injection the animal died, its weight having fallen to 1280 grams. The autopsy showed all over the surface of the liver small hemorrhages and yellow sclerosis and evidence of fatty degeneration.

Claude Bernard showed that one drop of nicotine applied to the cornea of an animal is sufficient to produce instant death.

Noel, Le Bon and others have shown that the toxicity of tobacco depends less upon the nicotine, its principal alkaloid, than upon the numerous other substances which are produced by the burning of tobacco. These authors have shown that tobacco smoke contains a crowd of noxious products, among the chief of which are prussic acid, collidine, methylamine, pyridine, bases, ammonia, formaldehyde, and carbon monoxide.

Le Bon isolated collidine and showed that one-twentieth of a drop of collidine is sufficient to quickly kill a frog with symptoms of paralysis. "One cannot breath the vapor of collidine even for a few seconds without experiencing muscular weakness and vertigo."

According to the same physiologist, the nausea, vomiting and headache produced by smoke are the result of the action of prussic acid. Prussic acid is found in tobacco in the proportion of three to eight milligrams (1/25 to 1/8 grain) in 100 grams (3½ ozs.) of tobacco.

Vohl and Eulenberg believe that most of the symptoms produced by tobacco smoke are due to prussic acid and collidine.

Grenant killed a dog with tobacco smoke. He found the blood showing all the characteristics present in poisoning by carbon monoxide.

Dudley attributed the effects of cigarette smoking to the same cause, carbon monoxide. Dudley also claimed that carbon monoxide is the most poisonous substance found in tobacco smoke.

Marcelet has shown that "one gram of tobacco (15 grains) in the form of a cigarette produces 20 to 80 centimeters (1 to 5 cubic inches) of carbon monoxide. A smoker who consumes 20 grams (⅔ ounce) of tobacco a day produces 1,600 to 2,180 cubic centimeters (100 to 125 cubic inches) of the gas.

M. Fleig considers that carbon monoxide plays no rôle in poisoning by tobacco.

The general conclusions drawn from the observations made in recent years is that the intoxication due to smoking is attributable not alone to the natural poisons of tobacco but to tobacco smoke; that is, to the poisons produced by the combustion of tobacco. It thus appears that nicotine does not play so important a rôle in tobacco poisoning as was formerly supposed, for it disappears in part from combustion of the tobacco.

### Technic

The author employed infusions of tobacco prepared as follows: Ten grams of tobacco cut fine, soaked in 5 grams (1⅔ ounces) of distilled water at room temperature during 24 hours. The liquid was then filtered and known as a 20 per cent infusion. These infusions were administered to rabbits, guinea pigs and mice, subcutaneously, intravenously and by the esophagus.

In using tobacco smoke Dr. Gy employed the following method: A flask perforated by two tubes, one attached to a porcelain or German pipe, the other to a rubber tube with suction pump. Twenty grams (⅔ ounce) of tobacco were placed in the pipe and 100 grams of distilled water placed in the flask, into which was submerged the end of the tube connected with the pipe. A partial vacuum is then produced in the flask and the smoke from the pipe bubbles through the water. The apparatus should be regulated in such a way as to maintain a constant gentle movement. A yellow liquid is obtained, the color depending somewhat upon the variety of tobacco used. The odor is always nauseating.

This "smoke water" was injected into the veins or under the skin of the rabbit, and to the guinea pig and white mice subcutaneously. The white mouse was found so sensitive to the poison that it was eliminated from the experiments.

The toxicity of this product appeared to be as great as that of infusions. It was found that an intravenous injection of one c. c. (15 drops) of the aqueous solution of tobacco smoke produced, in rabbits, convulsions and profound asthenia. The animal remained sometimes lying upon the side, sometimes flat upon the floor with its limbs extended; then it raised itself, but walked hesitatingly, and often showed paralysis of the posterior extremities. This asthenia was much less prominent in the guinea pig when the injection was made under the skin. After such injections in the guinea pig rapid emaciation was often observed.

The advantages of the smoke solution are great. They resemble the conditions of ordinary smoking, but evidently less carbon monoxide will be produced by the apparatus than by smoke.

The substances contained in tobacco smoke are highly volatile and consequently disappear very rapidly from the solution, in spite of precautions that may be taken; on the other hand, certain products of combustion are insoluble in water or dissolved only incompletely.

It is evident then that the acqeous solution of tobacco does not contain all the products of the combustion of tobacco.

These objections led us to adopt another method, the insufflation of tobacco smoke. The method is very easy. A glass tube, narrow at one end, is used. To this is connected the barrel of a syringe. By scratching with a needle a raw surface is produced and the tobacco smoke is applied to this surface. This method could not be used with large animals on account of the thickness of the skin.

We have also employed the method of smoke-atmospheres. In this experiment the animal is placed in a chamber into which tobacco smoke is drawn. Air is also supplied.

Gy employed for his smoke-atmosphere experiments a simple incubator from which the hot water reservoir was removed. A number of cigarettes were lighted and the cover was raised a little so as to allow a draft and the escape of the smoke. Air was then supplied to the incubator. The animals were kept in it about two hours on an average. The effect observed in rabbits and mice was marked weakness. The animals would not react to any kind of excitation.

Gebrowsky employed a similar method, confining his animals during eight hours daily, submitting them to the smoke of 25 grams (equal to six cigarettes) of tobacco and ventilating the chamber after each cigarette. After the first week the animals became accustomed to the smoke, but their movements were heavy and they lost appetite. There was progressive emaciation in all.

### Acute Tobacco Poisoning

Into the brain of a rabbit weighing 1,690 grams one quarter of a c. c. (4 drops) of a ten per cent infusion of tobacco was injected. The immediate effect was convulsions. The animal fell upon its side, remained immobile for an hour, and the next day was found dead.

One-fourth of a c. c. of tobacco smoke solution at 20 per cent was injected into a rabbit's brain. The animal took at once a catatonic attitude and died seven days later, having lost 200 grams (7 ounces).

In another rabbit weighing 1,850 grams (4 pounds) the brain was injected with two drops of a one per cent solution of purified nicotine. No marked effects resulted. Five minutes after a quarter of a c. c. (1-50 grain) of the same preparation was injected, the animal showed dyspnea, rolled over several times, showed paralysis of the legs, spasm of the muscles of the back and an hour later was still stupid.

### The Effect of Tobacco upon the Digestive Tube

Cramer proved that smoking slows the movements of the stomach.

Pouchkine concluded that tobacco increases the quantity of gastric juice but lessens its acidity, lowering the proportion of hydrochloric acid and diminishing the activity of the rennet ferment.

Osler observed loss of appetite in dogs dosed with nicotine.

Tobacco smoke passed through a solution of pepsin or gastric juice lessens the rapidity of the action of pepsin. The addition of an infusion of tobacco to gastric juice produces a still more marked effect.

Gy showed interstitial nephritis produced by nicotine.

Nicotine causes exaggeration of peristalsis and may give rise to diarrhea.

It sometimes causes irritation of the terminal filaments of the vagus (nerve of the heart and stomach) according to Kobert.

### Tolerance for Tobacco

Traube observed that 1/24 of a drop of nicotine sufficed to produce certain circulatory effects in an animal. The next day he found that to obtain the same effects it was necessary to inject into the animal a full drop, and four days later, four to five drops to produce the same effect.

Dr. Gy demonstrated that no antitoxin is developed in the blood as the result of using tobacco. This experiment was made: A rabbit was given full doses of tobacco infusion for several months. The serum from the blood of this rabbit was then injected into the peritoneal cavity of another rabbit. A quarter of an hour later a dose of tobacco infusion sufficient to kill a rabbit in two minutes was given. The effects were just the same as in the animals which had not received the serum. The conclusion is drawn from this experiment that chronic tobacco intoxication does not give to the serum of the individual or of the animal any antitoxic properties. The tolerance is due simply to the acquisition by the body of an aptitude for defending itself against the poison.

The first effects of the inhalation of tobacco smoke appear only the first time the inhalations are made; *but a study of the effects of tobacco upon the heart and blood* *vessels by delicate instruments shows that in spite of the tolerance the usual reactions occur;* that is, tolerance does not necessarily imply the absence of reaction, but simply the absence of intolerance. Tolerance means simply the tolerance of reaction.

*(To be continued)*

# Camp Roosevelt

Many great and powerful agencies are at work to promote good health. Perhaps the leading one of these agencies is the United States Public Health Service. Then, each State and each municipality maintains a Department of Health. The program ot each of these great agencies is very largely educational. The great difficulty encountered in accomplishing their objects is the difficulty of educating and training the adults, who have absorbing interests which give them little time to devote to this subject.

The place to begin, then, is with the child, and this is being done in our larger cities through the public schools. In every large city now there is a well-developed system of physical education and training, as a part of the general educational program. The Chicago public high schools have corps of trained teachers of physical education, who are doing splendid work in carrying out a program which includes physical examination, detection and correction of postural and muscular defects, instruction in all phases of hygiene, first aid, swimming, formal gymnastics, recreation, athletics, sports, and many miscellaneous activities. Of necessity, the time devoted to this important subject is limited, and there is always the long summer vacation in which practically every educational feature is permitted to lapse.

Realizing the desirability of utilizing this long summer vacation period for health-building and health-training, Captain F. L. Beals, U. S. A., Professor of Military Science and Tactics and Supervisor of Physical Education in the Chicago Public High Schools, succeeded in interesting leading business and professional men throughout the country in founding a great playground—an Olympian field—where boys could live under canvas, with a daily routine that would not only be instructive but interesting and recreative, and where, during the two summer months, they could receive a maximum of health-building, man-making training and fun.

The camp was named "CAMP ROOSEVELT" in honor of that great statesman and soldier, Theodore Roosevelt; and the high ideals for which he stood in his lifetime are the fundamental principles underlying this great movement. It is located at Muskegon, Mich., and is so situated as to give a maximum of recreation and enjoyment. It is sufficiently near water so that swimming may be indulged in freely, and at the same time it is sufficiently far removed to insure safety. Its broad plains are ideal for drills, manoeuvers, and athletics, while the wooded hills by which it is surrounded, give the necessary setting for such an enterprise.

The Chicago Board of Education sponsors the camp movement, and the high school faculty of the Camp Roosevelt Summer High School (for there is a summer school in connection) is selected from the Chicago Public High Schools. So also are the athletic instructors. The military di-

CAPT. F. L. BEALS

rectors are ordered to the camp by the War Department.

The War Department also cooperates to the extent of loaning tents, cots, mattresses, etc. It is interesting to note also that the War Department, as a result of two tours of inspection by officials of the Department, has adopted the Camp Roosevelt Plan as a national policy, and is endeavoring to establish three or four camps similar to Camp Roosevelt in other parts of the country.

Mr. Angus S. Hibbard, Chairman of the Camp Roosevelt Association, is at the head of a group of prominent business men from Chicago who contribute the necessary funds for financing the camp, in part. Donations are made each year by other patriotic and public-spirited men for this purpose.

The daily program includes military instruction, physical exercises, basketball, swimming, baseball, target practice, and all the out-door sports indulged in by the American boy. Week-end hikes to nearby lakes are features. In the evening, the entertainment includes movies, stunt nights by the companies, lectures by well-known business men, and campfires. This is the province of the Y. M. C. A. Hundreds of boys are here sent to bed happy, ready to fall sound asleep after a day filled with wholesome, clean, outdoor activities, a day that carries with it only those features that help to uplift and elevate the mind and thought of the boy.

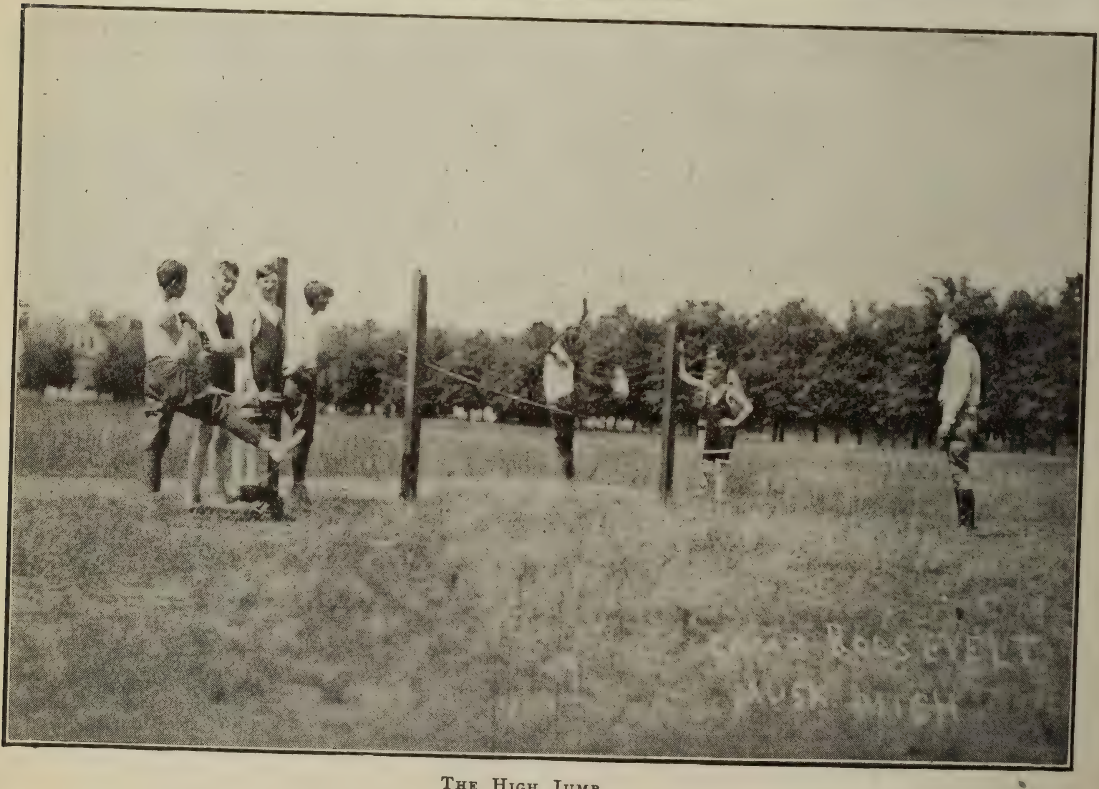
This new idea in camping is not a harem-scarem idea. It is the culmination of many months of thought and study on the part of a man well versed in boys and boy welfare. Captain Beals is a man of broad experience in military schools and military training. He has had ten years of experience as Commandant of Cadets and Professor of Military Science and Tactics. He was Commandant of the seven successful training camps at Camp Steever, summer of 1918. During the recent world war, he was brought to a full realization of the manifold benefits derived by our American manhood through the training camps, and he sought for ways and means by which the growing boy of today might receive the same splendid opportunity for increasing his physical well-being. As a result of much thought and study, he founded this "boy builder"—Camp Roosevelt.

The camp is not conducted to make money. The nominal fee which the boy pays in no way covers the expense of the cadet. Its aim is to provide a healthful summer's outing for the American boy under most carefully safeguarded conditions—a summer camp where boys and Scoutcrafters (for there is a large scout camp in connection) may spend a happy, profitable summer, chock-full of new experiences, new friends, and new ideas on clean, manly living.

BIRD'S EYE VIEW OF CAMP ROOSEVELT

"MESS"

A View of the Rifle Range



The High Jump

# The Health Decalogue

1. Live, work, play and sleep in the open as much as possible, and secure an ample amount of outdoor air when indoors.

2. Eat and drink for health and strength (biologically), and evacuate the body wastes at least three times a day.

3. Exercise sufficiently each day to induce perspiration and moderate fatigue. Walk more, ride less.

4. Hold the chest up when sitting, standing, walking, and so far as possible when at work.

5. Take proper rest by change of occupation and recreation, and endeavor to sleep eight hours daily.

6. Keep the skin clean, and harden it by exposure to the sun and air and by daily cold bathing.

7. Avoid poisons.

8. Avoid infections.

9. Dress comfortably and seasonably.

10. Cultivate calmness and contentment, and avoid depressing and exhausting emotions.

Treat the body as a delicate and nicely balanced machine, and in all things avoid excess.

Live the simple life.

**It pays to be good to yourself.**

J. H. Kellogg

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# Interesting Facts about the Eskimos

Professor Robert Brown gives in "The Races of America" the following interesting facts concerning the habits and home life of the Eskimos:

"For water they have a great dislike. When they wash themselves (which is rarely), a dirty and offensive liquid often supplies the place of the usual toilet requisite. If, however, they wet their feet, they never rest until they change their boots, the cold climate rendering them stiff and the feet icy after their immersion. It is probably the cold climate which gives them such an antipathy to washing. None of them can swim, as the chilly water soon freezes them; and even if they had learned the art, it would render the exercise of it impossible. If the mother wishes the child to look a little more cleanly than the dirt and smoke of an Eskimo hut would naturally allow, she applies her tongue to the infant, and the result is satisfactory—to the infant! In like manner, after she has cooked a piece of meat, she licks any sand or dirt off it before handing it to her husband or guest.

"The Eskimos are enormous eaters, and take most of their food raw or in a frozen condition. To eat eight or nine pounds of meat is not accounted an extraordinary feat, and a man will lie on his back while his wife feeds him with tit-bits of flesh and blubber, when he is utterly unable to move himself. Their powers of fasting are equally extraordinary. Fat of every kind comes natural to them, and is necessary to keep up the animal heat of the body. In eating, they cut off a large piece of flesh, take it between their teeth, then with a knife cut off a bit, and so on, severing the attachment between the bit and the lump, until the whole is gone.

"As the country abounds in natural ice cellars, or at least everywhere affords great facilities for constructing them in the frozen subsoil, the venison might easily be kept sweet until the hard frost sets in, and so preserved throughout the winter; but the Eskimo takes little trouble in the matter. If more deer are killed in the summer than can be then consumed, part of the flesh is dried, but later in the season it is merely laid up in some cool cleft in the rock, where wild animals cannot reach it; and should it become considerably tainted before the cold weather comes on, it is only the more agreeable to the Eskimo palate. When made very tender by keeping, it is consumed raw, or after little cooking. In the autumn, also, the migratory flocks of geese and other birds are laid under contribution, and salmon trout and fish of various kinds are taken. In this way a winter stock of provision is procured; and not a little is required, as the Eskimo, being consumers of animal food only, get away with a surprising quantity. In the autumn the berries of the cranberry, the blueberry, creeping Arctic brambles, etc., and the half-digested lichen in the paunch of the reindeer are considered to be a treat; but in other seasons this people never taste vegetables, and even in summer animal food alone is deemed essential. Carbon is supplied to the system by the use of much oil and fat in the diet, and draughts of warm blood from a newly-killed animal are considered as contributing greatly to preserve the hunter in health. No part of the entrails is rejected as unfit for food. Little cleanliness is shown in the preparation of the intestines, and when they are rendered crisp by frost they are eaten as delicacies, without further cooking.

"Most of the savage tribes tattoo themselves on the face, but this custom—contrary to the statements in most books—is not now practiced among the semi-civilized Greenland Eskimos, though in former times it was. The pattern simply consisted of blue lines, produced by drawing a needle and sinew thread smeared with lampblack under the skin; but every tribe has its own mode of tattooing. To the west of the MacKenzie, the men cut a hole in their lower lip, near the corner of the mouth, which they fill with a labret of bone, stone, or metal. Sir John Richardson informs us that at the mouth of the Mackenzie small green pebbles are obtained, which, when neatly set in wood or brass, are used for this purpose.

"No Eskimo whom I have ever seen would receive anything from any one without thanking him, and after looking it all over, puts it into his hood, or wherever else he stows his acquisitions. Whenever they meet any one, they cry, 'Timoo!' and will even show their goodwill by rubbing noses with him—a mark of politeness which could in most cases be dispensed with. Take them all in all, they are a very good-natured people, neither so lazy nor self-conceited as the Indians (though they have a sufficiently good opinion of themselves), free from many of their graver vices, quite as intelligent, and, while they have insuperably greater obstacles to contend against, showing higher moral and mental characteristics than most of the Indian tribes. Strange to say, their love of home and pride in their ice-bound country are immense. Several of them have visited England, Denmark, and America, but they always wearied to get back again; and though impressed with what they saw, yet after they got home they ridiculed the whites in every possible way. The warmer climates of the South disagree with them, and several have died before they could reach their country again. 'Do you see the ice? do you see the ice?' was the constant cry of one of them who had been taken to civilization, and reached his country only to die.

"Having occasion to visit an Eskimo hut on the western shores of Davis Strait when the younger members of the family were being put to bed, I was amused to see how it was done. The youngster, after eating a piece of blubbery seal big enough for an ordinary-sized man's dinner, and being suckled—as they are until about four years old—was popped, naked, into a seal-skin bag filled with feathers, a cap made of the white hare's fur put on its head, the mouth of the bag drawn, and the whole deposited in a corner out of the way."

August and Marie Krough, who made an expedition to North Greenland for the purpose of studying the habits of the Eskimos tell us:

"The food of the Eskimos is by no means regularly forthcoming, but times of abundance alternate with periods when seals are scarce or even unobtainable. The other sources of supply may also give out occasionally in winter and, as the Eskimos are extremely improvident, times of actual, though never complete, starvation are not unfrequent. The Eskimos prepare for such times chiefly by laying stores of fat in their bodies during the time of plenty. Rink[1] expresses the opinion that young and robust people may during several months when seals are abundant eat 4 kg. of meat or even more.

"The dietary habits of Eskimos present an extremely close analogy to those of the large carnivorous animals. An Eskimo seal hunter will rise early in the morning and take no food except a cup of water,

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*Since Rink's time the use of bread as an article of diet has steadily increased among the Eskimos, and the average consumption of bread would now probably amount to 200 gr. per day.

soup or nowadays generally coffee. He will go out to hunt either without food or provided with a small lump of dried or frozen meat. He will return in the afternoon (generally about 3 or 4), and as soon as the meat can be got ready he will fill himself to the limit of his capacity and then lie down to sleep for a couple of hours. After that he will talk and enjoy himself, and generally he will take another meal before turning in, and for this last meal of the day fish is often preferred even if meat is at hand.

"On sledge journeys during the winter in the North the same dietary habits are observed. The provisions on such journeys consist of dry or frozen meat and blubber. When a full meal of frozen meat (tp. -30° or lower) is taken at night the first effect is a feeling of extreme cold with much shivering, but half an hour later the heat-producing effects begin to manifest themselves, and the Eskimos and their dogs, which are fed in the same way and with the same results, are able to sleep in the open on such nights with only the sledges put up as a shelter against the wind. The increased metabolism due to the albuminous substances and independent of muscular actions may be of vital importance to the organism on such occasions.

"It may be of some interest to examine the mental and bodily qualities of the Eskimos, to see whether any influence of the peculiar diet is detectable.

"They are of short stature (mean height men 1.60 m., women 1.50 m.), well built, and with a distinct disposition to become fat. They are capable of hard and prolonged muscular work, but not mentally disposed for it. They possess an extraordinary power of enduring cold and hardships, but this must no doubt be ascribed chiefly to the climatic and social conditions and only to a limited extent to the diet.

"The state of health in Greenland is on the whole rather good, though the climate and the extremely unhygienic native dwellings are responsible for a great deal of rheumatism, affecting muscles and nerves, and also for some more serious diseases.

"With regard to diseases which can be or must be connected with the diet it is especially noteworthy that uric acid diseases are practically absent, in spite of the animal and nuclein rich food.

"Periods with abundant food are characterized by outbreaks of furunculosis, and it has been noticed further by medical officers and also by the natives themselves that in such periods many of them become extremely liable to profuse and frequent bleedings from the nose.

"With regard to the mental faculties, it is a notable feature that the Eskimos are probably the most peaceful and unwarlike race in the world. It is hardly in accordance with common belief that the corollary of a carnivorous diet and a hunting life should be the absolute mental incapability of dealing a blow to a fellow man, but so it is in Greenland. As far as can be ascertained, they quarrel very little among themselves, and that any quarrel, even the most serious, should lead to blows is absolutely unthinkable in Greenland. If an Eskimo becomes disgusted with another he will simply avoid him, and if necessary, go away and fix his abode elsewhere. Formerly it was customary to meet together at great feasts and there to settle quarrels by songs, in which each characterized the other party according to his ability. The man who could get his adversary most laughed at by the audience was the victor, but even such performances never led to blows"

# War Experiences and the Simple Life

An Army surgeon in the *American Legion Weekly* tells how his experiences led him to become an advocate of the physiologic method and the simple life:

"We were fairly well equipped when we went into the line. We had practically every sort of drug, from *abies excelsa* to Zittman's decoction.

"In those days, before the St. Mihiel advance, we had a lot of trouble with intestinal complaints, coughs and the 'flu.' Every man who showed even the slightest indication of wanting to be sick was carefully examined and fed the entire pharmacopeia at regular intervals.

"We got into trouble though, right after the fireworks started. Up near Romagne a shell hit our wagon and expunged the horses, pills, castor oil—the whole smear.

"We managed to salvage a liter of iodine and a bottle of C. C.'s, and after that if a man was able to walk he had to take his chances on the efficacy of faith cure and such stock as we had on hand. It was remarkable to see how well we got on. We could cure anything, from Bright's disease to a fractured ulna, with iodine, and O. D. pellets proved an infallible treatment for sore feet, earache and failing eyesight. Our supplies never caught up with us until the armistice stopped us on the Meuse, but we kept the battalion healthy. Enemy shell fire was about the only thing we had to worry about.

"I guess you might say that that's the principal thing we learned in the war—the remarkable resistance of the human body. In peace times we wouldn't have believed that a man could survive battlefield living conditions, even if he never had to face an enemy bullet. A lot of us learned that Nature doesn't need so much assistance in taking care of her own problems. From now on I'm a disciple of dietetics and simple drugs."

# Flesh-Eating vs. Intelligence

It has been argued by certain apologists for flesh-eating that human intelligence was developed by hunting and capturing prey, and learning to combat other animals successfully. But that this is not true is shown by the fact that the apes are the most intelligent of all animals next to man.

Says the learned author of "Living Animals of the World":

"The question of the comparative intelligence of the Apes and Monkeys, and the carnivorus animals subsequently described in these pages, is an interesting one. It would seem at first as if the Cat Tribe and their relations, which have to obtain their prey by constant hunting, and often to make use of considerable reflection and thought to bring their enterprises against other animals to a successful issue, would be more likely to develop intelligence and to improve in brain-power than the great Apes, which find an easy living in the tropical forests, and only seek fruits and vegetables for their food. Yet is is quite certain that this is not the case. The Cat Tribe, with the exception of domesticated cats, does not show high intelligence."

# Department of Eugenics

Conducted by WILHELMINE E. KEY, Ph. D.

# Eugenics and "Votes for Women"

Probably one of the most significant events of the current year has been the enfranchisement of the American woman. Not a few will assert it to be the most important in the history of the women's cause. The spectacle of millions of women taking their vast share in deciding the political fortunes of the nation has stimulated a host of questions as to the outcome of this new assumption of power.

Whither will this trend in our national development take us? Are these new lines of activity in harmony with the natural laws governing the evolution of the race? What does this change portend for the governmental fabric? Already women are mayors, judges, representatives. Will they become senators, generals and cabinet ministers? In the legislation which they sponsor, will they follow tamely in the paths already marked for them by their fathers and husbands, or will they blaze new trails toward the national destiny? Will the entry of woman into a fuller share of public life mean a further desertion of the family and the home and all that this entails for the soundness of the social fabric?

## Questions of Government Essentially Eugenic

All of these questions are in their essence eugenic. Governments exist for the perpetuation of the governed. If votes for women increase the chances of perpetuation, they need no other justification. If they are an expression of the tendencies which are making for racial decay, we should at least look the conditions squarely in the face and try to see what can be done to offset them. If the American people "die off at the top" faster and more furiously because of this new responsibility, we shall, in the end, have no nation to perpetuate. At least, we shall have no one to carry on the ideals and the institutions which are America's best reason for existing. So in the end, this great movement would defeat itself.

American women are voting. They are going to vote for centuries to come. The spectacle of the few States that essayed to oppose the tide of approval of the Woman Suffrage Amendment reminded one amusingly of the old woman who tried, broom in hand, to sweep back the sea. As well seek to turn back the tides, as try to stem these broadening currents of woman's destiny. But what and whom primarily are they going to vote for? Are they peculiarly fitted to advance and support measures which make for race conservation? In what sense can public officering through women be interpreted as eugenic, that is, as making for the highest type of human conservation?

## The Biological Significance of Sex

In order to answer these questions, let us glance for a moment at certain biological facts, and then at the story of woman's evolution through the centuries of historic time.

The most striking phenomenon among primitive forms of life is that of motherhood. The single mother cell gives up her life and individuality to the daughter cells. These, in their turn, do the same for the sake of their daughters. There were no fathers in the Age of the Monad. This fact has been urged in support of the proposition of the innate preponderance of female influence in the rôle of living things. But it can be equally urged in favor of the rôle of the male as making for evolutionary progress. The primitive organisms of remote geological time were relatively undifferentiated and ineffectual in the lives that they led. It is only with the coming of sex, that we find the variability which furnished the ground-work for the evolutionary advance of the great groups of the animal kingdom.

Two great facts stand out as factors in the upward march to humanhood. They are, first, the equal contribution of the sexes to determine the innate powers of the child, and second, the factor of nurture. Since the nurture of the child has usually fallen to woman, this would at first glance give the lion's share to the female sex in the determination of race fortunes.

Nurture, however is susceptible of a broad interpretation in this connection. If the brooding of the mother-bird is essential to the life of the nestlings, the feeding and watchfulness of the father-bird is no less necessary in order that they may grow strong to the point of fending for themselves. The same sharing of responsibility is to be observed among other of our humbler relations. Again, if the training end education of children has rested primarily with women, the institutions established by men have been no less important as furnishing the means for this training and education.

It is through a misapprehension of the facts of inheritance, that the choice of fathers has at times been given the greater emphasis in the carrying on of noble family lines. There is no warrant for this in biological teaching. The differences between men which commended them for acceptance or rejection in marriage have usually appeared more conspicuously than in the case of women. These differences are, it is likely, traceable to the larger opportunity hitherto accorded men in following our native bents. In general, it may be said that the contribution of characters from the two sexes is equal in the heritage of the offspring. A few characters, it is true, such as color-blindness and tendency to bleeding appear to come in only through the mother, but they in turn, have to be derived from her father, and appear only in her sons, not in her daughters. But in other respects, it may be said that in the mingling of parental and, indeed, of all ancestral characters in the germ material,—the material basis of heredity,—the mother is of like potency with the father. This being the case, it naturally follows that, for the future of the race, it matters quite as much how the mothers are chosen as how the fathers are. If the social trends, of which votes for women and public office are so conspicuous as features, mean more intelligent marriage selection,—and it would seem that they will mean this—then we need not fear and decry them.

### The Nurture of Children

It is, however, in the nurture of children that the public life of women will be felt to have its most serious consequences. The care and training of young America today is more and more left to institutions. In this way the direct personal impress of the mother becomes very faint, at times entirely negligible. Instead of a mother, the child has a dozen instructors, who stand somewhat in the relation of foster mother to him. In school, he may have four or five teachers, who in addition to the three R's, give him instruction in cooking, sewing and manual training. His play is supervised by a recreation director, and when he is sick, he has a trained nurse. In addition to these specialists there are various club directors who share with the foregoing, the responsibility of molding his developing powers. This leaves comparatively little for his actual mother to do for him. And, indeed, she usually has to engage in some lively hustling to keep informed of the various things these specialists are doing for him.

As we study the condition of woman in the several periods of the world's history, we find her now a plaything, now a slave or at least a drudge. Only rarely do we see her rising to an independent existence, as in ancient Egypt, where she engaged in trade and chose her husband in accordance with standards somewhat of her own making; or see her wielding any considerable share of political power, as in ancient Rome, where her counsel in state affairs was, for a time, held in like esteem with that of men. Chiefly, she has been the child-bearer and the performer of those services having directly to do with the rearing and training of the child. In this respect, her rôle through the ages has been one with that of the American woman in the first two centuries of America's history. It is the century just passed that has witnessed the great development which makes necessary radical adjustments in the life of women.

### Women in Pioneer Times

Harking back to the period of national beginnings, we find women, along with men, facing the hard conditions of pioneer times. These conditions drew to the utmost upon her strength, her alertness and resourcefulness. As with the men, the fact of survival for herself and her dependent family rested with the possession of these traits. Too often she went down in the struggle and her place was taken by the younger and stronger sister. In such fashion were reared those families of twelve and fifteen children, whereof the advent of the twelfth or fifteenth was signalized by the bestowal of some such name as "Finis" or "Content." The woman of today thinks with a groan of all the cooking and washing and sewing that had to be done for them, all the spinning and weaving in odd hours, that they might be clothed, and all the curing of meats and drying of fruits and vegetables, that they might be fed against the rigors of the hard, cold winter. The price these women paid was high. As has already been said, it was often their lives. We cannot too fervently celebrate the services of these pioneer mothers. To those who came after them there came too the rich heritage of a deepened and well-rounded personality, a forward-looking habit and a welcoming attitude toward new ideas.

This period of our history was pre-eminently the period of American family life. We hear practically nothing of clubs for women; and as for conferences and conventions, the press of domestic duties, the difficulties of travel and of communication by post rendered such of small influence.

Practically everything centered in the family. It was the pivot of educational, social and religious activity, and from the home as a center, woman was able to radiate an energy and an influence that left its impress on the larger life of the nation. As an example, compare the keen, witty, many-sided Abigail Adams with her husband, John Adams, as she reveals herself and her able discharge of multitudinous duties in her letters to her husband through the long years of his absence at the seat of national government. Her son, John Quincy Adams, must surely have been thinking of her when he declared, in defense of the suffrage petition of the women of Plymouth that "women are not only justified, but exhibit the most exalted virtue when they do depart from the domestic circle to enter on the concerns of their country, of their humanity and of their God." She is splendidly typical of the regnant women of her day,—and like them she reared the stalwart sons of freedom, who as teachers, statesmen and jurists set their hands to the fashioning of the new republic.

The strength of the nation lay largely in the strength of the women, and the women were strong because they lived to the full their essential tendencies, and were contributing their peculiar share to the forming of the social institutions of the times.

### Woman's Changed Position

The most tremendous changes in American life have come through the application, during the last half-century, of new forms of energy, notably those of electricity and steam. These have revolutionized industry, bringing about changed relations between man and man, and along with these has come a vital change in the position of woman. She has been accused of entering fields not her own, but she is no more responsible for the problems we are having to solve in relation to her, than is the laborer to blame for the labor problem, or any one class for the problems of trade, finance and education that have sprung up in the train of our phenomenal industrial development.

At the risk of being trite we must reaffirm that the application of machinery to so many of the processes which were formerly of the home has left her hands and her days comparatively empty. Or at any rate it would have done so if she had not, rather promptly, followed her work out into the world. In pioneer times, she had been the able helpmeet of the man. She too, had evolved types fitted to bear heavier burdens and larger responsibilities. What more natural than that the easement of domestic duties should mean the search for other fields? It was inevitable that she should do so, or that, denied this, she should use her enforced leisure for self-development.

That her freedom to search for new fields worked to the detriment of the family cannot be denied. It does not matter that the new field proved, in many cases, to be the old, and in its essential character, far less satisfying. The great world appealed as a flowery stretch, fraught with possibilities of adventure, the home life, drab and dull by comparison; especially did the bearing and rearing of children appear as the acme of humdrum existence. The fall in the birth-rate is in no small measure traceable to the change in the dominating interests of certain types of American women. Are these interests fundamentally at variance with her former tastes and tendencies?

In order to answer this question, let us scan the occupations which women have favored in the broader field they have entered on. We find that many of these occupations are practically identical with, others are extensions of, those which formerly had their center in the home. Such occupations as baker, milliner, visiting nurse and housekeeper belong directly to homekeeping, while those of teacher, librarian, recreational director, dietitian, welfare worker, are institutionalized forms of work that are essentially of the home. In choosing them women have instinctively turned to lines for which their native endowment peculiarly fits them.

A similar relationship emerges when we consider the measures which, through clubs and committees, they have initiated and carried to successful issue. Most of these measures have to do with the efficiency of the home. They have been concerned with foods, sanitation, and education in relation to child-saving. They have thus been directed toward the development of some of the deepest values of human life. Forced away from her earlier vocation of creating and shaping life through motherhood. woman has chosen those vocations and avocations which have as their aim, similar ends.

### Independent Attitude toward Marriage

One important result of woman's economic independence is her independent attitude toward marriage. Whereas formerly she had to marry in order to escape the rather tolerated and superfluous position of "old maid," now she narrowly scrutinizes her suitors, and if they do not come up to specifications, they are sent on their way. So sure is she in this matter, that she no longer affixes "by choice" in explanation of her very evident state of single blessedness. She elects, in the vocations just mentioned, some type of foster-motherhood, in preference to bringing up her own children, fathered as they would be by a man she does not wholly admire or approve.

This freedom in the choice of a life partner has in many cases resulted in a higher type of parenthood for those who did marry. But there can be no question that the general effect has been to decrease the number born to the intelligent and well-to-do. More careful nurture of the children in defective families can in no sense offset the lowered birth-rate in superior families. Care for the poor and the meanly endowed is imperative, but it should be the type of care that results in fewer children for these classes of our population. Otherwise the unfit will increase from generation to generation; and as they increase, more and more, the appeal of their multifarious wants will attract the finest women toward work in child-helping agencies and thus reduce further the potential motherhood of these finer women.

### Type of Political Measures Favored by Women

The planks offered by the women as their contribution to a more efficient Federal Government are similarly indicative of the basic trend of their interest. In addition to a Federal program for the care of mothers and their infants, they were briefly as follows: Rigid enforcement of the child labor law; protection of women in industry; suffrage; independent naturalization for married women, and a Federal Department of Education with a woman as its head. It will at once be seen that these are along the lines of her local activities before her enfranchisement. They are expressive of her care for race conservation and in keeping with her deepest instincts as architect of human lives and guardian of human values.

Woman is thus making a splendid first step in the broad march toward a higher national destiny. But in this connection it is essential to remember that not only is the welfare of the lives already here her especial care, but enlightenment and interest in the means of controlling the life to come, belongs rightfully to her sphere. Today humanity is reaching forward to the means of creating a superior human endowment for the generations to come. Woman, through her power of the vote, will have to make decision in respect to questions affecting the status of motherhood, education for parenthood, propagation of the defective and delinquent classes, and the integrity of the family.

It is imperative that she inform herself on the laws of heredity and fundamental eugenic principles. There is as much to be feared from championing too radical measures as in lagging behind the current of the times. Measures may go too far in undermining that necessary corollary of marriage, the common parental care of the child. Measures passed because of woman's inborn sympathy for the needs of helpless childhood may strike at the root of certain institutions which she would not wish to see destroyed. It is necessary that she recognize the ultimate drift of such proposals. A broad outlook and a far-reaching vision are needed as never before, in order that the newly acquired power of the franchise be wielded for the highest ultimate interests of the American people on whom rests so heavily the responsibility of directing the social and governmental policies of the world.

# Apartments for Babies

Under this caption, the *Eugenical News* prints a notice of a new alliance between certain city landlords and the stork. The city has come to be regarded as the natural enemy of the child. On the average, three generations suffice to snuff out the city-dwelling branches of a family. And the serious phases of the situation have not been confined to the slums. The apartment-habit among the well-to-do has made child rearing impracticable.

Now comes the cheering news that there are eugenically inclined owners of apartment houses, who far from having an antipathy for children, actually encourage "the infant industry" under their roofs. In Marietta, Ga., dwells a landlord who "makes it a standing practice to annually notify his married tenants that if they do not make a showing in the form of a family increase, their rent will be raised."

Walter P. Fulkerson, of St. Joseph, Mo. also goes on record as a practical eugenicist. He has announced that "whenever a child is born in one of his houses, the rent for that month will be returned to the tenant." The newly married are permitted to occupy his apartments only on the condition that "if there are no children in their families at the end of a year's residence, they will be asked to vacate."

# Our Physical Unfitness

Surgeon General Rupert Blue quotes Lloyd George as saying, "You cannot maintain an A-1 empire with a C-3 population."

General Blue cites the following among the various causes of rejection in the examinations for military service, together with the percentage of each variety of disability:

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| Alcohol and drugs | .43 |
| Bones and joints | 12.35 |
| Developmental defects (height, weight, chest measurements, muscles) | 8.37 |
| Digestive system | .53 |
| Ears | 4.38 |
| Eyes | 10.65 |
| Flatfoot (pathological) | 3.87 |
| Genito-Urinary (venereal) | 1.33 |
| Genito-urinary (non-venereal) | 1.35 |
| Heart and blood vessels | 13.07 |
| Hernia | 6.04 |
| Mental deficiency | 5.24 |
| Nervous and mental disorders | 5.07 |
| Respiratory (tuberculosis) | 8.67 |
| Respiratory (non-tuberculosis) | 1.67 |
| Skin | 2.68 |
| Teeth | 3.16 |
| Thyroid | 1.76 |
| Tuberculosis of parts other than respiratory | .88 |
| All other defects | 3.06 |
| Cause not given | 5.44 |

# Department of Physical Education

# The Physiological Age—Its Significance

C. WARD CRAMPTON, M. D.

*(Continued from November)*

Those working with backward and exceptional children have very generally adopted the principle of classification on the basis of various physiological and psychological epochs. Most prominent in application of this method have been Goddard, of Vineland, and Grossman, of Plainfield. Many of the Young Men's Christian Associations of the country now record pubescence on their examination records and regard it generally in the classification of their boys' departments. In many more they have divided the boys for the purpose of athletic competition on the basis of weight, which is a fair approximation to an actual division upon physiological lines. In the New York City high school this record has been made for six years, and in one high school there has been a division of classes upon this basis. In all schools athletic competition is based upon weight. In the management of boys in many summer camps the doctrine of physiological age has been applied with excellent results. Dr. George L. Meylan, of Columbia University, in his White Mountain camp on Lake Sebago, classifies his boys in two groups—the immature and the mature — on the basis of the pubescence sign; and these two groups are again subdivided into two. He finds that boys have a "better time" grouped with mates with whom they would naturally associate under normal conditions. It is easier to select masters who are particularly able in handling one or the other groups; the more vigorous camp and field work can be given to the more mature group, while the immature get the kind of care which they particularly need, and which would be interpreted by the mature as restrictive measures. Sports, training, and competition are readily made to fit each group, and the handling of the camp resolves itself into natural and distinct departments. He disregards chronological age entirely, placing some boys of 14 in the most mature group and others of like age in the least mature group, as their stages of development warrant.

In the High School of Commerce eight sections of the entering class were arranged in homogeneous developmental groups on the basis of pubescence, and the remaining four were not so divided. In the arranged eight sections the rate of discharge from school was 35 per cent less than in the four unarranged sections and 33 per cent less than from the previous entering class, also unclassified.

Dr. William E. Grady, principal of Elementary School 64, Manhattan, offered to put this doctrine into actual practice. Since it was impracticable to observe the pubescence sign of puberty, the writer visited the school and divided the boys of each grade from 6B upward on the basis of mere inspection. The boys formed a line and passed in review, each stating his age to the examiner. He was then given a number—number 1 was most mature, 5 the least. The following signs were noted: The voice (changed and low or unchanged and high); the presence of the second molars; height and weight; the subcutaneous fat of the face and hands. In the immature the subcutaneous fat is more evident and adheres closely to the skin, which is of finer texture; in the mature the skin is firmer and thicker, less attached to subcutaneous tissues, which contain less fat. The prepubescent may be fat, but there is an easily recognizable difference. This inspection is frankly different from the examination for pubescence, and the resulting classification may or may not differ from a division on the basis of that sign. It stands as a separate, but allied, experiment, and its results are regarded accordingly.

To one who has made full examination of tens of thousands of boys, such an inspection approximates pubescent ratings very closely. It is important to note that any close student of boys may be almost equally adept; for the principal of the school, after witnessing the classification of three classes, designated the gradings for 20 boys, 18 of which were correct and 2 varied but one step. At the promotion immediately after this inspection the boys were grouped into classes, of which there were three of each grade. The remaining two-thirds, less mature, formed the other two classes without separation.

Just before the preparation of this paper, after the experiment had been in progress nearly two months, the writer interviewed the teachers of these classes, to observe any results. It was surprising to find that practically all the teachers already had much to say upon the subject of the advantage of this grouping, and that they were of that type of intellectual independence that led them to give many observations regardless of their agreement with any preconceived theories.

## Advantages of the Homogeneous Group

I present the opinions as follows: Social consciousness is solidified; a feeling of solidarity in older groups becomes apparent, whereas in the mixed group the older boys found themselves separate and often isolated individuals. The tone and consciousness of the class was one in which the most successful pupils, who were mainly the immature, became predominant and the older boys were out of the social current. The separation of the mature group from the immature gave a class in which each exhibited to all the similar aspects of maturity, and allowed them to feel the presence of neighbors of their own kind with similar social and scholastic tendencies, abilities, and disabilities. As one teacher expressed it: "In the mixed class the older fellows didn't get together, now they do." This feeling of solidarity has resulted in making discipline easier for teachers who recognized it, and harder for teachers who did not. Practically all the teachers became aware of the change, as it developed, and adapted their method of control to meet the occasion.

With the younger group, the stern authority of the teacher carried the day; the *ipse dixit* was appropriate and sufficient. With the mature group, this class consciousness instantly arose against any punishment where innate righteousness was not apparent. The paternal method was not to be tolerated, and treatment which recognized the intelligent and reasonable manhood of the group was demanded and obtained. Discipline became fraternal; a thing belonging to the class, which the class regulated for itself. The teachers came to know this quickly, and adopted a method which bore all the essentials of a self-disciplining self-government. As one teacher says, "You can trust them like men now; you couldn't before; for the youngest couldn't understand it; and, besides, the shame of criticism before inferiors (the immature) made them surly."

*Reaction to Studies.* The separation of the mature group made perfectly clear that this group was different, and, in the main, less successful in their studies than the immature. They are, in general, the slow students, or they would have completed the school course long before. One teacher writes: "They were 40 per cent slower and intellectually clumsy." There is a general agreement among all teachers that the big boys are doing better by themselves, because they are free from the irritating superiority of the small boys, whose success was likely to be held up to them as a pattern and example. They feel more at home, and work with a much better spirit, and will plod energetically along in a task that is given them.

Above all, the teachers report that the older boys must be given work that appears to be reasonable. The learning of rules and the attack of a problem from the academic standpoint brings little reaction, while the application of a principle to present or prospective experience is grasped with a positive avidity. The immature will often collect information with the same interest that they collect postage stamps; the mature see the matter in a different light. This principle once sensed, applied teaching becomes easier and learning more rapid, and dull boys become earnest workers. Many of the teachers were so emphatic on this point that they urged the necessity of new subject matter and different pedagogical methods, and have begun to adjust both matter and method to the problem.

The younger group are inclined to take the teacher's word for the importance of the subject and react well to the descriptive, specific, and particular, while in the older group the general is sought and appreciated. It is evident that there is present the result of the budding of a desire, and an ability to organize knowledge upon a conceptual and reasonable basis and to adjust the same to present experiences, rather than a characteristically immature desire to acquire various kinds of knowledge and proficiencies which are valued for themselves and significant as acquisitions, and for which the value of use has but another minor appeal. This is but another way of expressing the statement found in one of my earlier reports, that the "earning instinct" has arrived and has colored all intellectual processes.

*Arithmetic.* A teacher who instructs both mature and immature classes, states that there are decided differences in their respective reactions to teaching; the immature will do anything you tell them to do; for instance they will learn the rules and mechanism for doing square root without question or resistance, and will be able to accomplish the desired result. The mature group find it difficult to do anything for which they cannot see any practical value. If the problems are given a business application, however, they (in the words of the teacher) "jump at it." The younger group are malleable and docile, but the mature must be shown something "real" upon which to base their interest. The old mixed class required the teacher to use two methods, or to use one method for only half the class at a time. The new plan gives one a chance to choose the proper material and the proper methods of using it, which is different for each of the two classes.

*Penmanship.* In the old plan of mixed classes the mature boys considered it beneath their dignity to work seriously in penmanship, for the smaller and more agile immature boys were far superior to them. "Well, he's a kid, and he can do it," was the general attitude. The teacher of penmanship realized the open avenue of attack was along the vocational line, and, following it, enlisted the strong cooperation of the mature group. They appeared before this as isolated, slow, and poor performers, continually at a disadvantage; they now have the feeling of working shoulder to shoulder with their own kind and for a common intelligent purpose.

*English.* The younger group are interested in description, and do it well. Their imaginations are lively, and fairy tales still retain a significance, while the older group seem to have lost the fancy which roams afield, and would center their attention upon the facts of life. While ability to describe the hypothetical, historical, or the imaginative is apparently diminished, it is really made more intensive, and focused upon experience. They become more adept at exposition, and can state the import of serious matters of their own personal interest with becoming facility and directness. It is easy to interest them in elaboration of subject matter, and difficult to keep their attention centered in analysis and syntax, which appeal strongly to the immature.

In singing, it was, of course, found that the mature had changed voice, and this facilitated the arrangement of classes in assemblies where it was an advantage to segregate those singing different "parts."

In physical training, the most apparent differences in reaction time and in the ability to do vigorous work, were noticed. What would exhaust the immature was just right for the mature, and what would fit the immature was not sufficient to stimulate the interest of the better developed. It is certainly obvious that no single period of exercise can be made to fit equally well two groups, one of which is from 30 to 40 per cent stronger than the other.

This experiment has demonstrated first the ease with which a school may be arranged upon the basis of physiological age, and the advantages which may result from it. The results substantiate the claims made for this method in my previous reports, and may be summarized as follows:

1. Boys in a homogeneous class feel more at home, and form for themselves a coherent social consciousness.

2. Consistent methods of management and discipline may be adapted to the whole class.

3. Choice of subject matter may be made appropriate to all, instead of a fraction of the class.

4. Teaching methods and manner of appeal may be chosen with the problem of but a homogeneous instead of a diverse group of students.

The whole should render school management more simple, and teaching more effective.

The practical application of this doctrine will result in the removal of the immature from the high school, where they do not belong and where their scholarship is poorer than the mature.

# Home Hygiene and Economics

## The Household Budget

SARAH J. MACLEOD

[The Good Health editors believe thoroughly in the household budget as the greatest aid to economy and thrift. If you do not use a budget now, you certainly will after reading this interesting, practical article which appeared in the June, 1920, *Journal of Home Economics.*]

The use of the budget in the home is slowly gaining favor among housekeepers, but a large number of women still meet the words *budget* and *accounts* with one of these comments: "My income is so small that I couldn't do any differently with it anyway," or "Well, I have a good-sized income, so why should I bother with a budget?"

An answer to these arguments is that a budget is simply a pattern for one's spending, and it bears the same relationship to the income as a paper pattern does to the material out of which a dress is to be made. If one has a small amount of goods, she adjusts her pattern and plans most carefully in order to get the essential parts of the garment out of the material. The same holds true in regard to the small income; if the spending is planned carefully, the chances are that one will obtain better food, clothing, and shelter than she would otherwise. On the other hand, if one were making a gown of very nice material, she would be most careful in adjusting her pattern, because she would want the best effect possible, and the same principle is applicable in using a larger income; if she plans her spending, it is most probable that she will get not only better food, clothing, and shelter, but also more of the other things in life that she really wants. After a subsistence income is reached, it is not so much the size of the income as the way in which the income is spent which gives satisfaction.

A budget is an individual thing; it is well to remember that budget figures which are so often published in women's magazines and by different organizations, are intended only as suggestions and are valuable in that they show how other people manage; the experience of others is always useful and helpful, but one does not have to do the same thing that others do; instead, one can choose the best that others have to offer.

In making a budget, the first thing to do is to face the size of the income, and if the income is variable, use the smallest amount one is likely to receive as the basis. Far too many people want to "take a chance" on the largest income that could possibly be received. This is a poor policy, for then, if one falls short and has to curtail, discontent is bound to result; whereas if one plans on the smaller income and the "extra" does come in, the surplus can be taken care of most happily.

The second thing to do is to decide what one wants out of that money, and the next step is to plan so as to get as many as possible of the things that are wanted. The amounts allotted to the various divisions should be written down, for, when plan and figures are set down in black and white, one will not make changes without some thought.

Various divisions have been used in planning the household budget, but, whatever the classification, the important thing is to allow for all possible expenditures.

The following classification has been found suggestive and useful and may serve as a basis:

Savings: Bank account; Investments; Life insurance.

Food: Meat and fish; Dairy products; Fresh fruits and vegetables; Groceries and ice; Meals outside the home.

Clothing: All wearing apparel and sewing supplies.

Shelter: Rent or taxes; Fire insurance; Upkeep; Repair.

Operating Expenses: Fuel, light, and telephone; Cleaning materials; Renewal of equipment; Service.

Household Furnishing.

Advancement: Education; Travel; Carfare; Gifts; Church and benevolence; Entertainment; Amusement; Club dues; Papers, books, and magazines; Stationery and postage; Physician, dentist, and medicine; Toilet articles; Personal taxes.

The budget is nothing more nor less than a plan for spending and, like any other plan, it is of no value unless carried out; and the only way to know how closely one is following the budget is by keeping accounts and comparing the results with the budget figures. The main reason for keeping accounts is to see how closely one is adhering to the standard set for one's self. A classified account form, whether in the form of cards or on a book, shows this most easily. To be able to account for every dollar is very nice, but because accounts do not balance is no reason for giving up the keeping of accounts. Is it not better, for instance, to be able to account for 95 per cent of the income than to give up keeping accounts because 5 per cent is missing? One will have much more satisfaction in knowing exactly what one is getting out of 95 cents of every dollar that is spent than if it is not possible to account for any of the money. The longer one keeps accounts, the more easily they balance.

After keeping accounts, one is either satisfied or dissatisfied. If one is satisfied, it is because of the written proof that one has received what was most wanted out of every dollar handled and that it is not possible to better the spending. Very often this feeling of satisfaction has been the greatest boon to the conscientious woman who perhaps has handled a great deal of money but who also has had heavy financial responsibilities and as a result has not been able to save as much as she desired.

On the other hand, when accounts show leaks and unwise expenditures, the feeling that results is far from that of satisfaction; but, instead of only having the feeling that entirely too much is spent, one can go over the accounts and pick out those expenditures which did not give full value, with the result that one will think twice before doing the same things again. A classified account shows the totals of the small spendings, and these are the ones which most often cause the trouble. Twenty-five cents is often spent unthinkingly, but a twenty-five dollar purchase is sure to demand some thought.

Accounts are interesting and valuable when they are analyzed and used in making comparisons, either from month to month or from year to year. It is perhaps of some value just to know how much has been spent, but that can be found out without keeping accounts, by subtracting what is left from what is received. What one does want to know is how the money has been spent and what each dollar has yielded.

The first two of the ten commandments of thrift which were adopted by practically all organizations interested in the development of thrift are, (1) Make a Budget, and (2) Keep an Intelligent Record of Expenditures. These are of prime importance in managing a business successfully; and it is no less true that when the home finances are managed in a thoughtful way, greater happiness results, because each activity in the home is better balanced, since it receives its just proportion of the income.

# Table Manners

### LYNN DAVIS HICKS

[The following article by Lynn Davis Hicks in the April, 1920, *Child Welfare* Magazine is reprinted for the benefit of young mothers who read GOOD HEALTH.]

What would you have done with this mother's problem?

The problem was a little girl, seven years old, and her table manners, or rather, we should say, her lack of table manners. For she had none, except very bad ones. She was growing very fast and was always ravenous at meal times, and if she was not served before everyone else, she was very ugly and impatient about it. When she did get her food, she would not stop to cut her meat, usually taking it up in her fingers, as she did much of her food. The home was a boarding house, so that there were always outsiders at the table, and the mother hated to correct the child before them. So little Agnes had formed very ugly habits.

The description is not exaggerated. The child reminded us of the pictures and accounts of the meals of cannibals, of cavemen and even of animals. We are not, perhaps, descended from cannibals or from animals, but there is no doubt about our being from cavemen, who knew nothing about such refinements as table manners. They ate when they were hungry, if they could get anything, and they ate in the easiest and the quickest way, as did little Agnes. Ugly habits are the result of the combination of hunger and lack of cultivation. Growing, active children represent this combination. Good table manners are one of the growths of civilization, and one of the later growths, it seems. The descriptions of meals in the days of knighthood and of castles are not pleasant to read. So it would seem that when culture had ceased to be an external thing, as are most refinements in their first practice, and had become innate with people, that barbaric methods of eating became repulsive—to dainty and elegant ladies at first, probably—and were modified to suit fastidious tastes.

But hunger is an older force than culture, and the starved or ravenous person always seems to forget manners. The main idea and the only one is to get food into the stomach. We have recently read that since the Bolshevist rule in Russia, men and women of the wealthy and educated classes have been so starved that they have fought the dogs in the street for the scant meat of a horse that had dropped dead from starvation; and that when they once had the horse flesh in their hands, they could not wait to take it out of sight or to cook it, but devoured it raw and dripping there in the crowd. The cultivation of centuries, of castles, of wealth and elegance dropped from them when real, deathly hunger was upon them.

It would seem that if little Agnes were not allowed to get so hungry she might not be in such a hurry. For manners take time, the time that no ravenous person is willing to give. If she were less hungry, she could wait more gracefully till others were served, she could take time to cut her meat and to use her fork or spoon to get food to her mouth. There is, we know, much advice against eating between meals, but evidently Agnes is growing so fast that the supply of nutriment that one meal gives her is used up before time for the next. Her stomach cannot hold enough to last over the hours till the next meal. So it would seem advisable to increase the number of meals—and to tell her why! She should not be allowed to eat all the time, for that would ruin her digestion, but to give her something at a certain hour in the morning (something for the school recess) and another "little snack" between the noonday and the evening meals would be feeding her regularly, and would keep her from getting so extremely hungry. Growing or repairing tissues use up food faster than do those that are merely restoring the destruction that is caused by normal conditions of living.

While Agnes is an extreme case, bad table manners are the usual tendency of children. They are the inheritance of the primal and one of the inheritances that must be constantly fought. Accepting the theory that every child is born with the primal instincts as strong as they were in the first man, we see that we must accomplish in a few years of training what it took evolution and natural culture generations to acquire. So we should expect a little trouble. But in this as in so many phases of child-training, "an ounce of prevention is worth a pound of cure." The preventive measures here are good example and forming the right habits—supported by the realization that one indulgence in the bad when it's the primal, as in this case, has more habit-forming force than twenty performances of the good—the cultivated method. It is impossible to prevent a child's seeing anyone ever eat with the fingers, for there are things, like bread and crackers and fruit that are carried to the mouth with the hand. As it is the easiest and the natural method, the child is apt to try it for everything, so that nothing but constant training can teach it what to eat with fingers, what with spoons and forks. So, from the preventive point of view, the valuable means are constant repetition with the child of the correct way and care that the child sees no way except that in his elders. Many children are allowed to eat in the kitchen with servants, whose table manners are not always such as we wish our children to have. And imitation is one of the strongest forces in childhood!

But preventive methods will not work after bad habits have been formed, and curative problems are the harder ones. One of the surest of these is an appeal to a child's pride.

"But first find the pride!" I can hear a friend challenge me.

Well, if you can't find it in a child, or if what there was there has been destroyed, then some must be cultivated in him. A pride in himself! What a wonderful asset —and what a help to those who must train him! To make a child feel that he is too good to do the things we do not want him to do is of inestimable value. Make him too proud to lie, too proud to steal, too proud to eat like an animal. Agnes' mother realizes the value of keeping Agnes' pride intact, knowing that to correct her before the outsiders would kill the little girl's pride. But spoken correction is not the only way to treat bad table manners. The very fact that the child was not spoken to can be interpreted to him to be a most telling correction, at the same time making him feel the meaning of pride. "I did not speak to you at the table about the way you were eating," a mother said to her child in the strictest privacy "because I hoped that no one else saw you, and I didn't want to call everyone's attention to you. It would have mortified me to have had people see that you were eating as you were, and I knew it would be very embarrassing to you." Again, the telling reprimand was in private. "Mr. and Mrs. Adams are coming to dinner tonight. Do you think you can eat nicely? If not, I will let you have your dinner before they come, for I could not invite people to my house and ask them to eat with someone whose bad manners might spoil all the pleasure of the meal. I would just say to them that you had had your dinner—they would not know why you were not at the table with us. I wouldn't want them to know that."

I have been in homes where the children responded instantly to a look or a gentle touch of the foot under the table. Correcting the child at the table does not necessarily involve drawing the attention of everyone else or of having a scene. If, behind the scenes, he has been impressed with the importance of the subject and the seriousness of your feelings about it, it is not going to take much to make him remember when he's at the table.

To use the expression "the importance of the subject" in this connection may seem exaggerated, but part of the harvest of taking the trouble to start children right is that feelings are developed which work for themselves with other subjects. For instance, to make a child feel that he, a human being, and a civilized human being, is degrading himself when he eats like a savage or an animal is to start in him a feeling of pride and a sense of the niceties of life that will make him shrink instinctively from other things that are like savages and animals.

So often have I heard it said, "Let me see a person eat, and I can tell you where he comes from," that it seems an injustice to a child to let him form ugly and disgusting table manners.

# Nourishing Cream Soups

## LENNA F. COOPER

Soups are served chiefly as appetizers, though they may be made to convey considerable nourishment. As appetizers they appeal through the senses of taste and smell. It is therefore important that they should be served hot, as hot foods give off aromas which affect the nerves of smell.

The cream soups are the more nourishing, though many of the plain soups are of high nutritive value. Cream gives a very delicate flavor to cooked foods, but it is often not a convenient article.

Milk and butter may be substituted for the cream in the proportion of two level tablespoons of butter and seven-eighths cup of milk for each cup of cream. When milk and creamed butter are used as a substitute for cream in soups, a little flour should be used for binding. White Sauce is frequently used as a foundation for soups.

The seasoning of soups is a very important part of the making of them and may be said to be the high art of the cook. A change in seasonings lends variety to otherwise plain soups. Onion, celery, bay leaf, thyme, summer savory, onion salt, celery salt, parsley, lemon rind and vegetable extracts, such as Savora and Japanese Soy, all add very much to the palatability of soup. Usually not more than two or three of these seasonings may be used advantageously in one receipt.

A crisp cereal preparation, such as a cracker, thin, crisp toast or croutons should be served with soup, thus insuring some mastication of the otherwise liquid food.

Nothing is better for the school children and business men than a good hot soup for luncheon or the evening meal.

### Cream of Potato Soup

3 medium sized potatoes
1 pint milk
½ cup cream
2 teaspoons salt

Wash and pare the potatoes, slice and put to cook in sufficient boiling water to cover. Put through a colander with the liquid in which they were cooked. Heat the milk and cream and add to the mashed potatoes. Add salt and cook five minutes.

### Cream of Rice Soup

¼ cup rice
2 cups water
2 slices onion
1½ teaspoon salt
3 cups milk
1 tablespoon butter
¼ teaspoon almond extract

Add the rice and onion to the boiling water. Cook until tender, then rub through the colander. Add the butter and hot milk. Reheat, season with salt and extract, and serve.

### Cream of Crecy Soup

3 medium sized carrots
2 cups milk
1 tablespoon flour
½ cup cream
1 slice onion (⅛ inch thick)
1 bay leaf
1 teaspoon salt

Wash, scrape and slice the carrots; cook in boiling, salted water. Steep the bay leaf and onion in the milk and cream in a double boiler for fifteen minutes. Remove the onion and bay leaf and thicken with flour. Put the carrots through a colander and add to the thickened milk and cream. Parsley may be added.

### Cream of Browned Onion Soup

4 medium sized onions
3 tablespoons flour
1 cup water
3 tablespoons butter
2 cups milk
1¼ teaspoons salt

Slice the onions and put in a buttered pan. Add a little water, and put into the oven, covered. When tender, remove the cover, and brown. Rub the browned onions through a colander, add the water and the white sauce, made by adding the hot milk to the butter and slightly browned flour rubbed together until smooth; cook ten minutes in a double boiler before adding to the onion. Reheat the soup, salt, and serve.

### Washington Chowder

2 medium sized potatoes
1½ cups water
½ small onion
1 teaspoon salt
1 cup stewed tomatoes
1 cup corn
1 cup milk
1 cup cream

Slice the onion and cook with the potatoes in the boiling, salted water. When tender, add the tomatoes and corn and bring to the boiling point. Heat the cream and milk and add to the vegetables just before serving.

### Oatmeal and Mushroom Soup

3 tablespoons butter
1 medium sized onion
½ cup oatmeal
1 teaspoon salt
1 quart water
1 pint milk
½ cup chopped mushrooms

Peel the onion and chop finely. Place in a double boiler with the butter and cook fifteen or twenty minutes, add the oatmeal and the boiling water and cook directly over the flame for about ten minutes. Then place in the double boiler and cook from two to three hours. Rub through a colander and add the milk. When thoroughly heated, add the chopped mushrooms and salt. The mushrooms are somewhat improved by broiling a few minutes before adding to the soup. A spoonful of whipped cream may be added to each serving.

# New Recipes

FERN FERGUS

### Mock Chicken Broth

3 tbsp. rice
3 cups water
½ tsp. salt
¼ cup mushrooms
1 tsp. savora
3 tbsp. butter

Cook the rice and savora in the salted water for one half hour. Cook the mushrooms in the butter in a double boiler and add the cooked rice and savora.

### Cream of Green Pea Soup

1 cup peas purée
1 tablespoon flour
1½ cups milk
1½ cups water
1 tablespoon butter
1 teaspoon salt

Press freshly boiled or canned peas through a colander to make a purée. To one cup of purée add salt, water and milk and heat to scalding. Rub the flour and butter together and stir in the hot liquid, return to the kettle, cook five minutes and serve.

### Rice Muffins

2¼ cups flour
¾ cups hot cooked rice
5 tbsp. baking powder
2 tbsp. sugar
1 cup milk
1 egg
2 tbsp. melted butter
½ tsp. salt

Mix and sift flour, sugar, salt and baking powder; add one half the milk, egg well beaten, the remainder of the milk mixed with the rice, and beat thoroughly. Then add butter. Bake in oiled muffin tins.

### French Floating Island

1 qt. milk
2 tbsp. cornstarch
⅔ cup sugar
2 eggs
1 tsp. vanilla
1 cup whipped cream

Moisten the cornstarch with a little of the cold milk. Heat the remainder of the milk in a double boiler and thicken with the cornstarch. Add the sugar and beaten eggs and cook about two minutes. When cool add the vanilla and serve with a spoonful of whipped cream on each serving.

### Sour Cream Cake Filling

⅔ cup sour cream
1 cup sugar
1 cup chopped Eng. walnuts

Mix the sour cream and sugar together and boil five minutes. Add the English walnuts and beat until cool enough to spread.

### Royal Fans

2 cups flour
½ cup brown sugar
¾ cup butter
1 beaten egg yolk
¾ tsp. water

Mix and sift the flour and sugar together. Wash the butter and work into first mixture using tips of fingers. Roll to one third inch in thickness, shape with a fluted round cutter five inches in diameter. Cut each piece in quarters and crease with the dull edge of a case knife to represent folds of a fan. Brush with egg yolk diluted with the water. Bake in slow oven.

### Fruit Rocks

½ cup butter
1 cup sugar
1 cup raisins
1 cup dates
½ cup buttermilk
1 tsp. baking powder
1 tsp. soda
1 cup rolled oats
¾ cup molasses
2 cups whole wheat flour
½ cup Eng. walnut meats
2 eggs
1 tsp. cinnamon
salt

Cream the butter and sugar, add the well-beaten eggs. Mix the dry ingredients and add to butter, sugar and eggs, alternately with the buttermilk. Add raisins, dates and nuts and drop from tip of spoon on oiled tins. Bake in moderate oven 20 minutes.

### Soy Bean Biscuit

An excellent biscuit may be made from soy bean meal by the addition of a sufficient amount of wet gluten to bind the meal together, and baking in a quick oven. The biscuit may be made lighter by the use of yeast.

# MEDICAL PROGRESS

## Gastric and Duodenal Ulcer

Of all dietetic problems the feeding of cases of gastric and duodenal ulcer is one of the most important, most interesting and most difficult of solution. It is now generally recognized that, aside from surgical procedures, dietetic measures are practically the only ones which afford substantial relief in these cases. Nearly all cases may be more or less relieved by proper dietetic treatment, and in by far the greater majority duodenal ulcer may be at least temporarily relieved and an apparent cure accomplished. Unfortunately, however, there is in these cases an inveterate tendency to relapse. So marked is this tendency that a well-known surgeon being asked the question, "When should surgery be resorted to in cases of duodenal ulcer," replied, "When they have been cured nine times." It is probable that in a large proportion of instances relapse might be prevented by very careful adherence to a special dietary. Unfortunately, however, the average ulcer patient does not consider himself cured unless able to return to his ordinary diet, which is invariably the dietary calculated to develop ulcer and therefore very likely to lead to this result. The mere fact of the recurrence of ulcer is evidence that the resistance of the body to the causes which produce ulcer of the stomach and duodenum has broken down, so that the development of ulcer can be prevented only by careful avoidance of all the causes known to be provocative of these conditions, particularly those foodstuffs which usually unduly tax the energies of the stomach and weaken its defense by prolonging the digestive period and over-stimulating the gastric glands, resulting in the production of an excess of gastric acid.

Every case of gastric and duodenal ulcer should be studied by an X-ray expert to determine if possible the location of the ulcer and whether or not it is a so-called "penetrating ulcer." This examination is also important for the reason that it often throws light upon the question of the possible presence of cancer, always a contingency in these cases, especially when the seat of disease is the stomach. When cancer is present, an operation, if the case is operable, is the only course which offers any substantial hope for the patient. It has been definitely proven that gastric cancer is often the outgrowth of an antecedent ulcer, so that an ulcer of the stomach, even when apparently cured, may later become the seat of malignant disease. This is rarely, if ever, true of duodenal ulcer, and fortunately by far the greater majority of cases of ulcer in this region involve the duodenum rather than the stomach.

An operation is also imperatively indicated when the ulcer involves the pylorus, for the reason that an ulcer in this region is certain sooner or later to cause delay in the emptying of the stomach, because of mechanical obstruction at the outlet. Very profuse hemorrhage or repeated hemorrhages, whether from the stomach or duodenum, as indicated either by the vomiting of blood or bloody stools, is an urgent indication for operation.

If the X-ray examination shows that the ulcer is penetrating in character, that is, if it has formed a deep pocket through more or less destruction of the muscular walls of the stomach, an intestine operation is clearly indicated, for the reason that these ulcers are seldom, if ever, permanently cured by other than operative measures.

# Diet in Gall Bladder Disease

Infection of the gall bladder, either with or without gallstones, as in the case of other of the cavities of the body, is chiefly due to stasis or stagnation of its contents. When the gall bladder is not fully and frequently emptied, it becomes an incubating chamber. The bile is not a real antiseptic, and when charged with mucus, as it always is when diseased, it becomes a most excellent media for the growth of putrefactive bacteria and other disease-producing organisms. On this account, it is highly important in cases of this sort to secure as complete and frequent emptying of the gall bladder as possible, thus lessening the opportunity for the growth of bacteria and the development of virulence.

Something may be done in the way of massage toward emptying of the gall bladder. The cool enema (85° to 75°) stimulates contraction and emptying of the bile reservoir. Free water drinking (5 to 6 pints daily) thins the bile and encourages its passage into the intestine. But the most effective means of exciting contractions in the gall bladder is the taking of food. When food begins to pass out of the stomach into the duodenum through the pylorus, the contact of the acid mixture of gastric juice and food with the lining membrane of the duodenum. excites powerful contractions in the gall bladder. On this account it is better for patients with gall bladder trouble to take small quantities of food at frequent intervals, preferably four times a day. Two hearty meals may be eaten and two minor meals, the latter about two hours before mealtime, so as to secure complete emptying of the stomach before the next meal. The late Professor Dujardin-Beaumetz called attention to this fact as long as thirty years ago.

A point which the professor overlooked, however, is the need of making a careful selection of foodstuffs when four meals are taken. First of all, the food should be easily digestible, and of a sort which leaves the stomach quickly. Fruit fills the indications exactly, and should constitute the sole food taken at the minor meals. Acid fruits are most serviceable, when well tolerated. Unfortunately, acids of all sorts are frequently badly tolerated and in such cases must be excluded from the bill of fare, juicy sweet fruits being used exclusively. Purées of bananas and other mild fruits are most suitable for the minor meals. Melons are very wholesome. Rice gruel or plain potato purée may be used when fruit does not agree.

Fats must be avoided at the minor meals, because they delay the movement of foods from the stomach. Bran or agar may be taken, along with paraffin oil, to still further hasten the discharge of food from the stomach and the emptying of the gall bladder.

In cases of gall bladder disease the patient often suffers, when the stomach is empty, from gastric spasm or cramp, an exaggeration of normal hunger contractions, the so-called hunger pain. This is also an indication for the taking of small quantities of food. Similar pains are sometimes associated with an excess of acid secretion. In such cases the use of bicarbonate of soda in dram doses may be used in addition to small quantities of simple food.

# The Diet in Syphilis

In syphilis the liver and kidneys suffer, especially because of the enormous amount of toxins with which they have to deal, even when they may not be the seat of special lesions, as is often the case. Beside this it is important to know that the huge doses of highly toxic drugs which are necessary to destroy the parasite of syphilis are by no means without deleterious effect upon the liver and kidneys. It is, in fact, simply a question of the choice of evils. The injury inflicted by the powerful arsenical preparations used is not merely temporary but doubtless more or less permanent, like the results of a severe attack of typhoid fever, smallpox or any other grave infectious malady. For example, it has been shown by life insurance statisticians that an attack of typhoid fever diminishes life expectancy 50 per cent. Certainly, a person who has had syphilitic infection cannot expect to become a centenarian, even though he may have undergone most thorough antisyphilitic treatment; since the treatment itself involves no small amount of damage to the vital organs, although far less than would have resulted from the syphilitic parasite and the poisons produced by it, had the treatment not been applied.

Bailey and Mackay have called attention to the toxic changes which frequently occur in patients under antisyphilitic treatment, with other symptoms resembling those of yellow atrophy of the liver; while Davis and Whipple have shown the importance of reducing protein and fats to a minimum in cases in which the liver has been damaged by chloroform and other poisons. The increase of urea and cholesterol in the blood point to injury of the kidney as well as the liver. The observations made by these investigators, together with those long known concerning the function of the liver in defending the body against metallic and organic poisons, show clearly the importance of lessening the work of this vital organ by reducing the protein and fat of the diet to a minimum, while supplying it with the necessary glycogen to assist it in its work of destroying and distoxicating not only the syphilitic poisons but the toxic substances used to destroy the parasite by means of a diet rich in carbohydrates. An eminent authority, writing upon this subject, remarks, "A diet of cooked skeletal muscle is not favorable for rapid liver repair." "Cooked skeletal muscle" is a fine scientific euphemism for beefsteak, roast beef, mutton chops, and other forms of meat.

It has long been known to those familiar with the advantages of a non-flesh dietary that the disuse of flesh foods of all sorts is of very great importance in the treatment of syphilitic patients.

## Gastric Acidity

The amount of acid formed by the stomach in the digestion of a meal depends primarily upon the character of the food. Rehfuss and Hawk confirm the observation of Pavlov that animal foodstuffs produce a higher degree of acidity than do vegetable foods, the average acidity for beef being 120, for eggs 80, and vegetables 70. Milk produces greater acidity than do eggs. Bread and cereals produce the lowest degree of acidity. The degree of acidity produced by animal foodstuffs is equal to that which is universally regarded as pathological and indicative of disease. From this fact the inference may be clearly drawn that the habitual use of meats must tend to produce a diseased condition of the stomach. Low acidity may be due to severe anemia, to gastritis, to a regurgitation of alkaline secretions from the intestine, or it may be of purely nervous origin.

## Angina Pectoris from Tobacco

Buchard, the eminent heart specialist of Paris, many years ago called attention to the fact that tobacco smoking causes spasm of the blood vessels of the heart, which gives rise to the most agonizing pain of angina pectoris. This spasm may occur in other parts as well as in the heart. When it occurs in the eye, it gives rise to tobacco blindness. Occurring in the blood vessels of the abdomen, intense spasms of pain are produced, so-called abdominal angina. The spasm may also occur in the blood vessels of the legs, in which case the patient suffers from cramps in the legs which bring him to a sudden halt in walking, the so-called intermittent claudication.

## Incipient Goiter

In certain parts of the world, such as the Alps, the Himalayas and the Andes, and in this country the region of the Great Lakes, simple goiter is widely prevalent. A survey of some schools in the lake region has shown the existence of goiter in about one-half of all girls in the fifth to the twelfth grades, or between the ages of 11 and 17 years. Enlargement of the thyroid is found to be six times as frequent in girls as in boys.

An experiment on a large scale made in the schools of Akron, Ohio, showed that the enlargement may be prevented by administering three grains of iodine daily for ten days each spring and autumn. Apparently no harm results from these short courses of iodine treatment. It is quite possible that the same benefit might be derived from the freer use of foods rich in iodine, such as greens.

## Water for Infants

Infants often suffer from lack of water. The crying of young children is often due to thirst rather than hunger. A child under one year of age should receive for each pound of body weight two ounces of liquid, either in the form of water or liquid food. Children over a year old require not less than one quart of water daily.

## False Croup in Children

Dr. Cardey, of Buenos Ayres, in an interesting article on false croup, emphasizes the fact that this disease is chiefly the result of bad feeding, particularly an excessive protein diet. The worst effects are seen in children between the ages of one and four years. The disease may be best prevented by a careful dietary, which should consist chiefly of cereal gruels, vegetable soups and fruit juices, with milk.

## High Blood-Pressure and Diabetes

The observation has recently been made that persons suffering with high blood-pressure, particularly those who have marked degeneration of the blood vessels, are likely to show sugar in the urine, especially when an extra amount of sugar is eaten. Seven and three-fourths ounces of sugar was found to increase the blood sugar notably and to cause the appearance of sugar in the urine. It is evident that persons who have high blood-pressure are potential diabetics, and on this account should be careful to avoid taking an excess of carbohydrates and particularly to avoid the free use of sugar in any form.

## Eczema

Eczema is now generally admitted to be due, in the majority of cases, to irritation of the skin by some external agent. For the development of the disease, however, it appears to be necessary that there should be a special sensitivity of the skin, either hereditary or acquired.

Bacteria, without doubt, have much to do with the disease by developing in the follicles of the skin, producing these toxins, and thus giving rise to the irritation present in this disease.

Among external irritants may be mentioned a great variety of plants, particularly the poison ivy, the primrose, narcissus, daffodil and other plants and chemical agents of various sorts such as are found in certain paints, varnishes, hair lotions, antiseptics, especially formalin, and the great variety of chemical irritants met with in various occupations, as the result of which we have almost as many different forms of eczema as there are special industrial occupations.

Among those especially liable to eczema from this cause are housewives, painters, printers, photographers, grocers, barbers, bakers, plasterers, soap makers and cigar-makers.

It is evident that in all cases any external cause of irritation must be removed. There is no doubt, however, that this special susceptibility of the skin which renders it subject to the influences of these various chemical irritants is encouraged by certain systemic irritants, particularly by chronic intestinal toxemia due to infection of the colon, usually the result of a high protein diet.

## Tests for the Stomach

A pint of warm water is introduced into the stomach and small quantities withdrawn for testing at intervals of 15 or 20 minutes. Water is a gastric stimulant. By its use it is possible to determine whether mucus or other abnormal products are being formed by the stomach, also to ascertain whether there are present in the stomach secretions which have been regurgitated from the duodenum.

## Inoculation for Hay-Fever

Hay-fever is the result of a sort of poisoning which occurs through the inhalation of the pollen of plants. It is possible that nearly all pollens are capable of producing some degree of irritation of the membranes of the nose and the usual symptoms of hay-fever in greater or lesser degree. It is known that pollen from the rose, daisy, timothy, and many other plants produce mild forms of hay-fever or pollinosis, commonly known as "rose colds," but the severe form of hay-fever which develops in late summer is generally believed to be due to the pollen of the ragweed. The pollen grains of this plant have the form of minute burrs and are capable of boring their way into the mucous membrane, and thus penetrate very readily and more deeply than do other pollens. It is probable, also that the poison of the ragweed is more virulent than that of most other pollens.

It has been found that the milder forms of hay fever, and rose colds may be prevented by inoculation with extracts of the pollens which produce them. This method, however, seems to fail in the case of ragweed, although it is claimed by Dr. Walter that some benefit may be derived from inoculations with very small doses after the attack begins.

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"We have received some most excellent information from the Good Health magazine, and have great confidence in your good sense ideas and methods."

### Octogenarian Vegetarian

G. W. Martin,
*Asbury Park, N. J.*

"I have been greatly benefited by this best of health magazines and some of Dr. Kellogg's books and I hope to continue until the age of 100 years (I am 78 now) as a vegetarian."

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"Herewith find remittance for next year's subscription to Good Health—the valuable magazine I prize so much."

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*St. Louis, Mo.*

"I have always enjoyed the reading of your magazine. It is one of the essentials in my reading matter and I could not well dispense with it."

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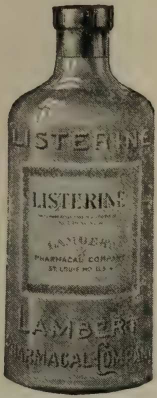
Listerine is a saturated solution of boracic acid and volatile antiseptic oils—complete formula stated on package—it may be diluted with water without precipitating its constituents—being non-poisonous and unirritating, it has a wide range of usefulness—

**As a wash and dressing for wounds;**
**As a gargle, spray, or douche;**
**As a mouth-wash-dentifrice;**
**As a deodorant and antiseptic lotion.**



Cuts, scratches or abrasions heal quickly under the antiseptic protection of Listerine, as it does not destroy tissue cells or retard the natural processes of repair.

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In all cases of fevers, where the patient suffers so much from a parched condition of the mouth, a few teaspoonfuls of Listerine in a glass of water provides a refreshing and effective mouth-wash.

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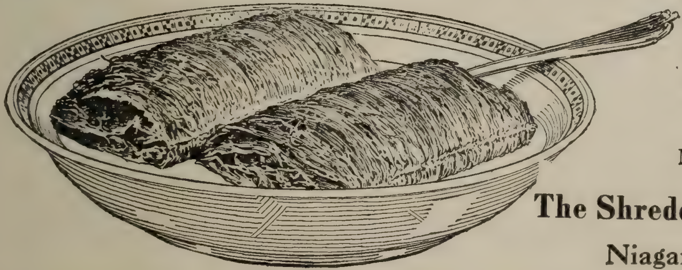

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**THE HOMEMAKERS' COURSE** of one year is planned for young women not desiring a professional training, and includes such subjects as Physiology, Cookery, Care of the House, Marketing, Sewing, Millinery, Dietetics, Home Nursing and Basketry.

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**THE DIETITIANS' COURSE** of two years fits one for institutional work in hospitals, dormitories, hotels, clubs, schools, orphanages, cafeterias, and lunch rooms in factories, Y. W. and Y. M. C. A.'s, and office buildings—for the position of Laboratory Technician and Extension and Social Service work.

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Opportunities are offered students to defray a part of their expense. Tuition and living expenses are moderate. Write for illustrated prospectus giving full outline of curricula, terms, and entrance requirements.

Lenna F. Cooper, B.S., Dean.

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BATTLE CREEK - MICHIGAN

# Editor's Question Box

*12,244. Tobacco Heart.—G. J. P., Ohio.*

Please give symptoms to be found where one has a "tobacco heart." How can a man tell if he has that condition?

*Ans.* Among the symptoms of tobacco heart are pain in the region of the heart, shortness of breath on exercise, and rapid or irregular pulse. Every man who smokes has tobacco heart, for tobacco is a heart poison. The more a man smokes and the longer he smokes, the greater his heart is damaged.

*12,245. Pin Worms.—F. D. M., Ohio.*

What is the remedy for pin worms and how does a child get them?

*Ans.* These parasites are communicated from one person to another through the transportation of their eggs from the intestine of one person to that of another, by means of water, food, flies, and possibly through the soiling of the hands. It is probable that the fly is the most common means of communication. It has been shown that a fly lighting only for a few seconds upon a morsel of food may deposit an egg which, being swallowed, will lead to the development of parasites in the intestine of the host.

The best remedy for these troublesome parasites is santonin, of which the dose should be varied according to the age. The following rule is a good one: One to 2 years of age, one grain; 2 to 4 years, 2 grains; 4 to 6 years, 2 and one-half grains; 6 to 10 years, 3 grains; 10 to 12 years, 3 and one-half grains; 12 to 18 years, 4 grains; an adult 5 grains. Santonin should be given three times a day on alternate days for one week. In addition, a quassia enema should be administered twice daily. The solution should be prepared by soaking two ounces of quassia in a quart of water over night. In many cases the addition of soap to the water answers as well as the quassia. For the itching, apply within and about the anus an ointment prepared by the addition of one dram of calomel to an ounce of yellow vaseline. In obstinate

*(Continued on page 14)*

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**C. H. VOORHEES**

**Success Fruit Farm Box 405, So. Lake Weir, Fla.**

# Editor's Question Box

(*Continued from page 12*)

cases it is sometimes necessary to repeat the treatment after an interval of a week.

*12,246. High Enema.—E. R. S., Illinois.*

How much water is safe to use at one time as an enema? What is the "high enema?"

*Ans.* Three pints of water is usually sufficient to empty the colon. When warm water is used, a larger quantity is needed than when water at a lower temperature, say 90° to 70° F., is employed. In extreme cases, three and one-half or four pints may be found necessary to empty a large colon, but these cases are very exceptional. In many cases the best plan is to introduce two pints of water at a temperature of 102° F. and follow this with a pint of water at 90° to 80° F. The warm water will relax the contracted colon; the cool water stimulates the colon to expel its contents.

*12,247. Food Combinations.—Starch.—W. O. W., Pennsylvania.*

Should one take more than one kind of starch at a meal? Is there anything to the common idea that certain foods do not "combine" at the same meal?

*Ans.* If foods are thoroughly chewed, that is, reduced to a semi-liquid form in the mouth, they are very little likely to disagree, no matter what the combination. Persons who suffer from hyperacidity find it advantageous to take olive oil or fats in some form quite freely in connection with sweets and acid foods.

*12,248. Honey.—B. L. T., Massachusetts.*

How much honey may a well man eat daily when he has a sweet tooth? May a three-year old child have bread spread with honey?

*Ans.* Two ounces ought to be sufficient. There is no objection to giving honey in moderate amount to a three-year-old child. It must be remembered, however, that honey contains flavors and other substances to which some people are sensitized and may give rise to inconvenience on this ac-

(*Continued on page 16*)

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# The Health Question Box

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**Normal School of Physical Education**

**21 University Ave.**

**Battle Creek - - Michigan**

# Editor's Question Box

(*Continued from page 14*)

count. It is also unwise to indulge the "sweet tooth" to such a degree as to encourage an abnormal appetite for sweets.

*12,249. Diet Rich in Calcium.—P. F., Wisconsin.*

My dentist advises a diet rich in calcium. What does he mean by that? What foods should I eat?

*Ans.* Your dentist means that you should eat foods which are rich in food lime. Greens of all sorts, bran and oatmeal with other whole grain preparations contain the largest proportion of food lime, and should enter freely into the bill-of-fare of all persons who wish to preserve their teeth and to maintain good health.

*12,250. Finger Tips Look Pale and Feel Numb.—K. G., Michigan.*

What makes the finger tips look pale and feel numb? This condition appears at any time of day but not every day.

*Ans.* According to Combe, of Lausanne, one of the world's most eminent authorities on autointoxication, pallor and numbness of the fingers is due to poisons circulating in the blood, and is the result of autointoxication. The bowels should be made to move three times a day by the free use of bran, agar, and mineral oil. It would be well to use the enema at night. There are several books which you may read with advantage, particularly "The Itinerary of a Breakfast," "Colon Hygiene," and "Autointoxication."

*12,251. Malaria.—E. R., North Dakota.*

Would it be possible for a person to contract malaria in China and not develop severe symptoms until returning to this country? Would the change of climate make the germs active?

*Ans.* Yes. The parasites might remain in latent form for some time and later become active. It has recently been discovered that hot baths may cause malarial chill by causing a latent infection to become active.

# Book Notices

## Food and Flavor

Mr. Henry T. Finck, one of the editors of the *New York Evening Post,* has given us one of the most unique volumes relating to food, or dietetics, which has appeared in recent times. The author deals with his subject not from the standpoint of the physician or the physiologist, but from the standpoint of the scholar and the psychologist. And he has made a book which is racy reading from start to finish.

Without detracting from the importance of Mr. Fletcher's observations and discoveries, Mr. Finck clearly establishes a priority claim to some important additions to our gastronomic knowledge which are commonly attributed to Fletcher, and likewise points out an important error committed by Fletcher in attaching superlative importance to the sense of taste rather than the sense of smell which, as Mr. Finck very clearly shows, is the dominant factor in gustatory enjoyment.

Mr. Finck points out more clearly than any previous author has done the distinction between flavor and fragrance, and many years before Mr. Fletcher made his first contribution to the subject of nutrition in a paper in the *Contemporary Review,* on "The Gastronomic Value of Odors," called attention to the importance of retaining the food long enough in the mouth to secure a just appreciation of its fragrance, a suggestion set forth less clearly more than a hundred years ago by Brillat-Savarin, a famous French judge who took refuge in this country during the French Revolution, and wrote a book entitled *"Physiologie de Gout."*

The following list of chapter heads will give the reader some suggestion of what a mine of interesting and unusual information the work affords:

Ungastronomic America; Vital Importance of Flavor; Our Denatured Foods; The Science of Savory Cooking; A Noble Art; The Future of Cooking; French Supremacy; Epicurean Italy; German and Austrian Delicacies; British Specialties;

*(Continued on page 18)*

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**BATTLE CREEK - MICHIGAN**

## Book Notices

*(Continued from page 17)*

Gastronomic America; Commercial Value of Flavor; Gastronomic Value of Flavor; Gastronomic Value of Odors.

The editor is glad to add this work to his library, and from time to time will serve up to GOOD HEALTH readers some of the author's delicious tidbits. The book has a felicitous style, entertaining as well as instructive.

Every caterer, every dietetian, and especially nurses and physicians, should possess this book and become acquainted with its contents.

"Food and Flavor." By Henry T. Finck. Net $2.00. The Century Company. New York.

### The Health of the Teacher

Health, strength and joy for all teachers is the purpose of this important book by Dr. Wm. E. Chancellor. From the stress of added work during war times the teachers in general have awakened to the truth that they have been overlooking in the past a very serious matter, the control of their own health. It is deplorable and unnecessary that the death-rate is much higher in the teaching profession than in most other professions and trades,—it has a higher death-rate from tuberculosis than any other occupation. After only a few years of service the health of the majority of teachers becomes impaired and statistics show that they are obliged to retire from activity much earlier than people engaged in business and other professions. With such a condition in the profession which is the foundation of the nation, and which numbers three-fourths of a million people, it is about time that somebody gave some thought to the matter. Dr. Chancellor deserves the gratitude of the entire educational profession for giving them a book they needed greatly, and which immediately should be made a textbook in every teacher's reading course.

"The Health of the Teacher." By Dr. William Eastabrook Chancellor. Net $1.25. Chicago. Forbes & Company.

## The Forbidden Trail

A drama of the desert—Mrs. Willsie's new novel might well be so described—a drama of human strivings and courage, of human weakness and failing, a drama of love and beauty—all heightened by the light, the unearthly fascination, the strange power, of the Arizona desert to which even readers who have never been there must yield.

"Still Jim" and "The Heart of the Desert" established Mrs. Willsie as the writer who from actual experience could make readers share her love of that land of romance and wonder. In "The Forbidden Trail," the author gives a story of gripping intensity, of unusual happenings in which the sweetness of human love, the power of man's ambition, and the harmfulness of man's passion and weakness are pictured with manifest sincerity and intensity. A man's conquest of Nature and his more important conquering of himself are the vital points of a theme that brings in a richness of incident from beyond the beaten track of conventional fiction.

"The Forbidden Trail." By Honore Willsie. Net $1.60. New York. Frederick A. Stokes Company.

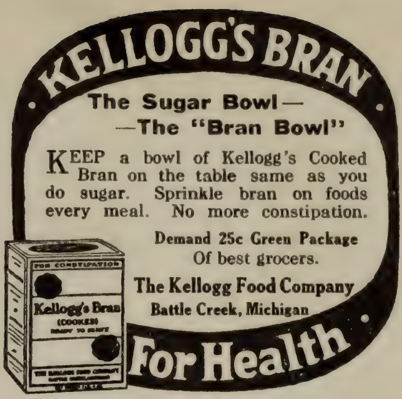
## The Position of Peggy Harper

No author now writing knows so much of the ups and downs of stage life as Mr. Merrick, and never has he used his unequalled acquaintance with things theatrical and literary to better effect than in *The Position of Peggy Harper.*

In all his novels there is no more characteristic gallery of memorable portraits than in this story of a young Oxford man who endeavors to become in turn an actor and a playwright, and of the rise to fame and fortune of the cheery, happy-go-lucky Peggy.

Moreover, it is yet another triumph of conciseness and ease in narration, given by the author's sheer mastery of style.

"The Position of Peggy Harper." By Leonard Merrick with an introduction by Arthur Pinero. Net $1.75. New York. E. P. Dutton & Company.



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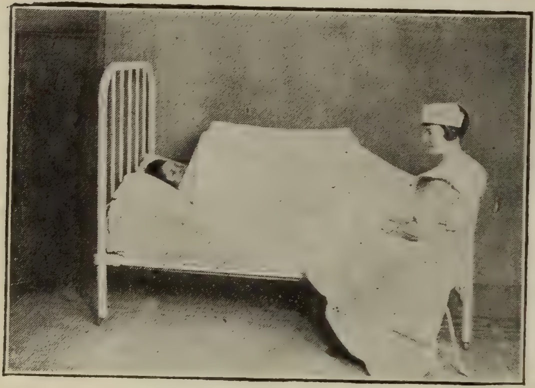

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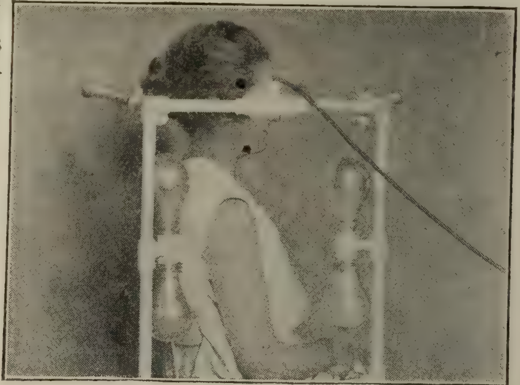

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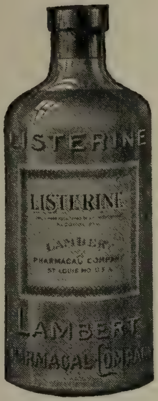

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As a face lotion, after shaving, the application of Listerine allays irritation and promotes the healing of an abraded or otherwise injured surface of the skin.

In all cases of fevers, where the patient suffers so much from a parched condition of the mouth, a few teaspoonfuls of Listerine in a glass of water provides a refreshing and effective mouth-wash.

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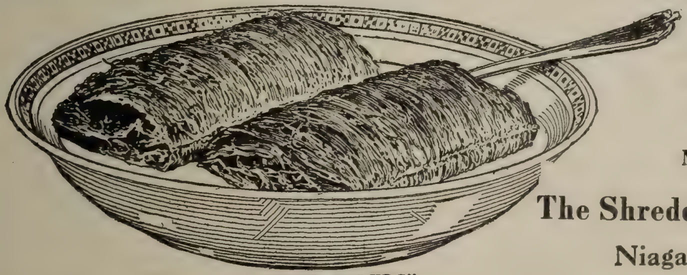

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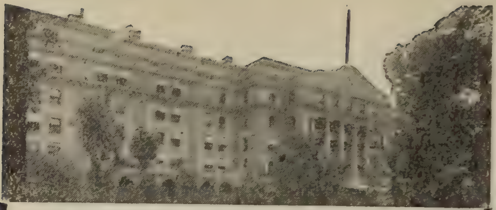

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In addition to the high scholastic standard, students enjoy refined companionships, pleasant surroundings, and the many advantages of the Sanitarium with which the school is affiliated. For those who enjoy athletics there is boating, swimming, skating, tennis, and other sports.

Opportunities are offered students to defray a part of their expense. Tuition and living expenses are moderate. Write for illustrated prospectus giving full outline of curricula, terms, and entrance requirements.

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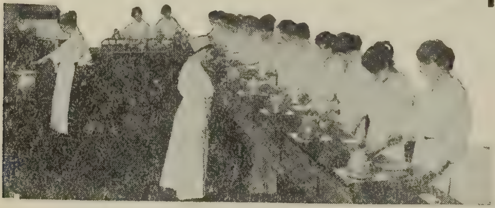

# Editor's Question Box

*12,252. Essence of Peppermint.—S. B. Vermont.*

Is there not real value in essence of peppermint taken in very hot water, slightly sweetened, as a relief for stomach pain from gas or hyperacidity? Old-fashioned remedies were often effective.

*Ans.* There are many simple remedies which afford temporary relief from common ailments. It is the writer's opinion that the very hot water renders the service rather than the peppermint.

*12,253. Fruit at Bed Time.—G. G. W., Michigan.*

Is it bad practice to eat both oranges and apples at bedtime or should only one kind of fruit be taken?

*Ans.* Oranges and apples do not disagree and may be trusted to lie down peacefully together at bedtime.

*12,254. Singeing of Hair.—S. T., California.*

Hairdressers often advise the singeing of hair to make it grow, and to improve hair health. Is this of any use? Also should one use a brush with stiff or soft bristles when the hair is of ordinary weight?

*Ans.* Singeing the ends of the hair is of no benefit to anyone but the barber. It adds to his fees. It does not promote the growth of hair. Brushing the hair does not promote its growth. Brushing the scalp stimulates the circulation and brings an increased supply of blood to the roots of the hair. The brush should not be stiff enough to irritate the scalp.

*12,255. Constipation in Baby.—G. M., Colorado.*

A month-old baby has been constipated from birth and always needs assistance to move the bowels. Mucus also appears, and curds in the stool. The baby is breast fed. What can we do?

*Ans.* Apparently the baby is suffering from colitis, having somehow become infected. It would be well to administer an enema of warm water. It may be 100° F., quantity, two or three ounces. The child

*(Continued on page 14)*

*Another cup please!*

*—and another cup at night time doesn't hurt, if it's*

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shipped in small carton by *prepaid express* to any point east of Mississippi river. (Those living west of river, please write for delivered prices.) This fruit is fully tree ripened—not gathered green and colored in the house. The oranges are of the famous "Parson Brown" variety, which is the finest flavored orange grown. The grape fruit is the "Duncan," and has the true grape fruit flavor. There is nothing healthier than well-ripened fruit, and this is especially true of grape fruit. These cartons will contain from 45 to 60 Oranges, or 20 to 24 Grape Fruit, and will be shipped about December 10.

I will send you a carton of either orange or grape fruit for $2.75—all charges paid.

3 cartons of either oranges or grape fruit or assorted fruit to one address—$7.50.

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**C. H. VOORHEES**
**Success Fruit Farm Box 405, So. Lake Weir, Fla.**

## Editor's Question Box

(*Continued from page 12*)

should be given a teaspoonful of paraffin oil emulsion once or twice a day. The emulsion should be mixed with a tablespoonful of water.

*12,256. Bran.—W. A., Michigan.*

Can bran bought in bulk for cattle be cleaned in the home for human consumption?

*Ans.* Ordinary bran may be rendered safe by moistening, putting in an oven and baking. Such bran, however, contains much dirt. For human use it is better to employ bran which has been specially prepared and which is known to be clean.

*12,257. Foul gas in the Intestines.—S. A. A., Ohio.*

Why should annoying collections of foul gas still persist in the intestines after one has carefully followed the "biologic diet" for several months and has three bowel movements daily?

*Ans.* The difficulty is that the colon is not completely emptied. Very likely there is abnormal dilation of the right half of the colon, possibly a pouched cecum. Food residues remain in this dilated portion of the bowel until putrefaction takes place. The colon is so badly crippled that mechanical aid is needed. An enema, consisting of three pints of water, should be taken at bedtime every night. Bran and agar or mineral oil should be used freely at each meal. It is well to add a heaping tablespoonful of malt sugar or milk sugar to the water used for enema. Further valuable suggestions will be found in "The Itinerary of a Breakfast," "Colon Hygiene," and "Autointoxication."

*12,258. Valvular Heart Lesion.—P. E. M., Louisiana.*

Can anything be done for a person about forty years of age, having a valvular lesion of the heart? He has suffered from sciatica for several years. Did the sciatica cause the defective valve? Is a person thus affected liable to sudden death?

*Ans.* I will answer the last part of your

(*Continued on page 16*)

# Dioxogen

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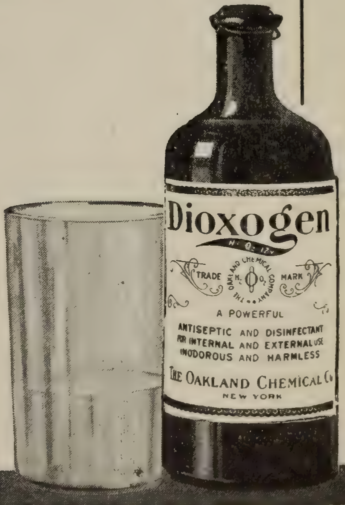

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is the motto of the Normal School of Physical Education—a school offering an intensive course for the perfection of technical skill.

Graduates of this school are placed as instructors in girls' schools, seminaries, colleges, universities, Y. W. C. A.'s, clubs, business establishments and great industrial plants where special attention is given to the physical welfare of employees. The work is very pleasant—much of it being out-of-doors on playgrounds and athletic fields.

The school's affiliation with the Battle Creek Sanitarium makes possible extensive equipment—two indoor gymnasiums, outdoor gymnasium, indoor and outdoor swimming pools, students' club room, model physical director's office, well-kept tennis courts and golf links as well as the laboratories, research departments, social and professional advantages of the institution.

The course of study is thorough and includes training in small groups in a variety of specialties. A unique and practical feature is the course in business and organization methods.

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Limited number of admissions. Summer course begins July 7th. Winter term September 15th.

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C. Ward Crampton, M. D.

**Normal School of Physical Education**

**22 University Ave.**

**Battle Creek - - Michigan**

## Editor's Question Box

(*Continued from page 14*)

question by saying that valvular disease is the least dangerous of the various forms of disease of the heart. Sudden death from this cause is very rare. When the valves of the heart are diseased or crippled, there are often very loud noises connected with the action of the heart, but in most cases these do not indicate any danger to life. No danger may be apprehended so long as the circulation is well carried on; that is, if there is no dropsy, no shortness of breath, no blueness of the lips or other indications of defective circulation, there may be no apprehension of immediate danger. Nothing can be done to repair the injury of the heart, but much can be done to prolong the patient's life and to avert dangers of various kinds. A person with a crippled heart must absolutely refrain from the use of alchohol, tobacco, tea, coffee, indeed, from drugs of all kinds. If a laxative is ever thought necessary, it must be used only as an emergency measure. It must not be used habitually. Even mineral water should be avoided. Many of these laxative drugs are very depressant to the heart and weaken its action. While care must be taken to avoid violent exercise, equal care must be taken to avoid the damage to the heart which necessarily results from an idle or sedentary life. The heart, like other muscles, can be strengthened only by exercise. The exercise must be carefully graduated, that is, increased from day to day, but violent or fatiguing exercise must be carefully avoided. It is especially important for persons who suffer from organic disease of the heart to exercise with great care to keep the bowels active. Organic disease of the heart tends to cripple the liver by interfering with the circulation of the blood through it. The liver is the organ upon which we chiefly depend for protection against poisons, and when it becomes enlarged and much crippled, colon poisons as well as other poisons rapidly do their deadly work through hardening of the blood vessels and other forms of degeneration to which they give rise.

# Book Notices

## Our Nervous Friends

Dr. Carroll has made a study of nerves and nervousness. In the course of his professional work, thousands of interesting cases have come under his care and observation, and out of his successful treatment of them he has deduced certain fundamental principles. These principles have been made the basis of the chapters of this book.

Writing in semi-fiction form he portrays, with photographic clearness, the life stories of people addicted to nervousness. His method of presentation arouses the reader's interest at once—there is humor and real human drama in the pages. But Dr. Carroll's chapters have more than a fictional interest; each makes a definite point, brings home a lesson, shows the way out.

"Our Nervous Friends." By Robert S. Carroll, M. D. $2.00 net. New York, McMillan Company.

## Ladies-In-Waiting

In this volume Mrs. Wiggin brings together five of her most characteristic and enjoyable short stories. Some of the titles are familiar to magazine readers, and all of the heroines, whether they belong to town or country, have a common bond of sympathy in the waiting which fell to their lot. The stories are "Miss Thomasina Tucker," "The Turning Point," "Huldah the Prophetess," "Two on a Tour," and "Philippa's Nervous Prostration." They have the author's familiar good qualities, her fascinating art, her bright and natural conversation and her very entertaining humor.

"Ladies-in-Waiting" will get a hearty welcome from all who enjoy good fiction.

"Ladies-in-Waiting." By Kate Douglas Wiggin. Boston. Houghton Mifflin Company.

## The Box with Broken Seals

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(*Continued on page 20*)

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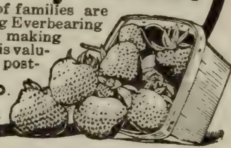

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## Book Notices

(*Continued from page 19*)

folds in his best style a thrilling narrative of a German spy, Jocelyn Thew, and the English secret service. "This story was written," says Mr. Oppenheim, "to explain exactly how the important documents which were not found in the chest with the broken seals belonging to Ambassador von Bernstorff when he sailed from America, were conveyed to Europe." The reader follows with avidity the daring moves of Thew from the time he sails from New York on "City of Boston" accompanied by a dying man and a special nurse in the person of Katharine Beverley, a society girl who is under obligations to Thew. The eventful trip across the Atlantic, and the attempts of the German agent to outwit his enemies in England, lead to the climax which will surprise even the inveterate Oppenheim reader

"The Box with Broken Seals." By E. Phillips Oppenheim. Net $1.75. Boston, Little, Brown & Company.

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**New Variety.** "Mama, I want a dark breakfast."

"Dark breakfast? What do you mean, child?"

"Why, last night you told Mary to give me a light supper, and I didn't like it."—*Blighty (London)*.

**Biblical Note.** A bashful curate found the young ladies in the parish too helpful. At last it became so embarrassing that he left.

Not long afterward, he met the curate who had succeeded him.

"Well," he asked, "how do you get on with the ladies?"

"Oh, very well indeed," said the other. "There is safety in numbers, you know."

"Ah!" was the instant reply. "I only found it in Exodus."—*Dallas News*.

**Not Enough.** "Swept by saline breezes and washed by the waves of the sea. That's our town."

"Any other street-cleaning facilities?" inquired the old grouch.—*Louisville Courier-Journal*.

**Sad Fate of a Ham.** A young man entered the village shop and complained to the owner that a ham he had purchased there a few days before had proved not to be good.

"The ham is all right, sir!" insisted the shopkeeper.

"No, it isn't," insisted the other. "It's bad!"

"How can that be," continued the shopkeeper, "when it was cured only last week?"

The young man reflected a moment, and then suggested:

"Maybe it's had a relapse."—*London Blighty*.

**Puzzled.** A kindergarten teacher asked a small boy to tell his father's occupation. When she saw the child did not understand, she said, "Is your father a carpenter, a lawyer, a farmer, or a bricklayer? If he is not any of these, what is he?" After thinking a while the boy said, "I do not know what he is, but I guess he is a smoker."—*The No-Tobacco Educator*.

**He Couldn't Cough.** *The King*—"I must have gold, you imbecile! Cough up!"

*Prime Minister*—"But, your Majesty, the coffers are empty."—*Michigan Gargoyle*.

**What Does a Mendicant Mend?**—*Maid*—"There's a mendicant at the door, madam."

*Mrs. Newrich*—"Well, tell him we haven't anything to mend just at present."—*Selected*.

**The Two Schools.** "My son-in-law is a doctor."

"What school?"

"School?"

"Yes, is he one of the cheer-up sort, or one of the kind that shakes his head and looks solemn?"—*Selected*.

**Cut Sugar.** "The doctor says I'm eating too much sweet stuff. Says sugar makes you lazy. Think it does?"

"Loaf sugar might."—*Kansas City Journal*.

**He Knew.** *Sunday-School Teacher*—"Where do all little boys and girls go to who do not put their pennies in the collection-box?"

*Pupil*—"Please, m'm, to the movies."—*Paterson Press-Guardian*.

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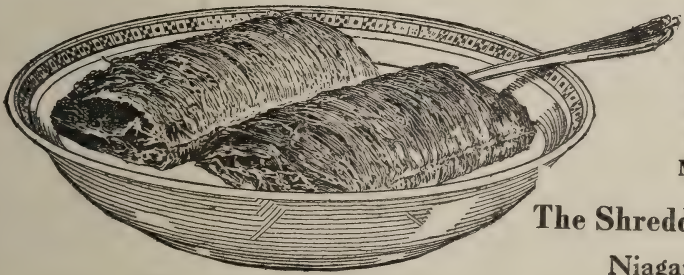

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**23 University Ave.**

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# Editor's Question Box

*12,259. Lemon Juice — Lemon Peel.— Subscriber, Tennessee.*

Should an elderly person in good health take the juice of a lemon every day, or every other day, for several weeks? When should lemon juice be taken and how much should it be diluted?

*Ans.* Lemon juice is wholesome. Well diluted it can do a person in ordinary health no harm. Lemon juice contains useful vitamins and has a wholesome effect in general. The valuable salts contained in lemon juice tend to antagonize the action of acids, which are likely to accumulate in advancing years and give rise to hardening of the arteries. The juice of half a lemon in a tumberful of water may be easily taken without injury. Sugar, if added, only conceals the lemon juice. It does not neutralize its acidity.

2. Is lemon peel wholesome?

The flavor of lemon peel is due to an essential oil found in little capsules scattered over the surface. This oil in a pure state is highly irritating to the mucous membrane or the skin. A considerable amount of lemon peel taken into the stomach at once might do some harm, but a few bits of lemon peel used as a flavor may be considered harmless.

*12,260. Granulated Eyelids.—Subscriber, Canada.*

What is the cause of granulated eyelids and what is the best home treatment?

*Ans.* The cause is an infection of the glands of the mucous membrane. There is no satisfactory home treatment. The services of an able oculist are required. An application of radium or the X-ray is the most efficient means of treatment at present known. Bathing the parts five minutes three times a day with hot water is a useful measure and gives considerable relief in many cases.

*12,261. Cold Water in Hyperacidity.— J. F. B., New Mexico.*

Should cold water be taken the first

(*Continued on page 14*)

# Good From The Start

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I will send you a carton of either orange or grape fruit for $2.75—all charges paid.

3 cartons of either oranges or grape fruit or assorted fruit to one address—$7.50.

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**C. H. VOORHEES**
**Success Fruit Farm Box 405, So. Lake Weir, Fla.**

## Editor's Question Box

(*Continued from page 12*)

thing in the morning if a person has hyperacidity or much gas in the stomach and bowels?

*Ans.* It is well to take water. Cold water is better than none, but hot water is preferable.

*12,262. Home Treatment for Bronchial Catarrh.—R. L. T., New Mexico.*

Can you suggest helpful home treatment for bronchial catarrh?

*Ans.* In most cases of bronchial catarrh there is inactivity of the colon. The bowels should be made to move three times a day by the use of mineral oil emulsion and bran or agar.

*12,263. Sugar in the Urine.—W. H. C., Tennessee.*

Two tests made within a month show one and one-half per cent of sugar in urine. All other tests normal. Patient is forty-two and has had acid stomach and nervousness for years. Advise probable cause and recommend diet. The patient has never indulged in sweets nor had extreme thirst or ravenous appetite. He eats much bread, however.

*Ans.* In the opinion of the writer the most common cause of diabetes is constipation, resulting in colitis or infection of the colon, which gradually extends upward until the gall bladder becomes involved and finally the pancreas. Infection of the pancreas causes pancreatitis, which is practically always the direct cause of diabetes. Diabetes is thus one of the effects of chronic autointoxication. There is also some reason for believing that the excessive use of cane sugar is the cause of diabetes. In every case of diabetes, great attention should be given to the colon. The bowels should be made to move three or four times a day.

*12,264. Cottage Cheese—Starchy Foods.—T. M. S., District Columbia.*

Does cottage cheese have an acid reaction? Would eating two to six ounces

(*Continued on page 16*)

**Dioxogen**

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Up to date, Influenza has claimed more victims among the uncleanly, careless and ignorant than from any other class of people; the Saskatchewan Indians in proportion to population contributing nearly as many as all the others combined.

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**THE HOMEMAKERS' COURSE** of one year is planned for young women not desiring a professional training, and includes such subjects as Physiology, Cookery, Care of the House, Marketing, Sewing, Millinery, Dietetics, Home Nursing and Basketry.

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**THE DIETITIANS' COURSE** of two years fits one for institutional work in hospitals, dormitories, hotels, clubs, schools, orphanages, cafeterias, and lunch rooms in factories, Y. W. and Y. M. C. A.'s, and office buildings—for the position of Laboratory Technician and Extension and Social Service work.

In addition to the high scholastic standard, students enjoy refined companionships, pleasant surroundings, and the many advantages of the Sanitarium with which the school is affiliated. For those who enjoy athletics there is boating, swimming, skating, tennis, and other sports.

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**Lenna F. Cooper, B.S., Dean.**

**The Sanitarium School of Home Economics**

**23 Administration Bldg.**

**BATTLE CREEK - MICHIGAN**

## Editor's Question Box

(*Continued from page 14*)

of cottage cheese a day cause inflammation and eruption about the toes?

*Ans.* Cottage cheese has a highly acid reaction, it being made from sour milk. If used in so large quantity as to leave some residue of undigested curds in the colon, cottage cheese, or milk in any form, might encourage autointoxication and in this way tend to encourage eczema. Many persons are sensitized to milk. In such cases the use of milk in any form may give rise to skin eruptions.

2. Do starchy foods decrease the alkalinity of the blood?

The use of starchy foods has no particular effect one way or another upon the alkalinity of the blood directly. In cases of marked acidosos, however, the free use of starch or carbohydrates is one of the most effective means of antagonizing the acidosis. Grains tend to encourage acidity, not from the presence of starch, however, but because of the considerable amount of mineral acids contained in them,—phosphoric, hydrochloric, and sulphuric acids, in combination with lime and other bases.

*12,265. Influenza—Spraying the Throat.* Is it generally conceded by physicians that an attack of influenza or grip makes one more susceptible, or immune, to another attack?

*Ans.* There is a tendency in both directions. The injury to the respiratory organs tends to make them susceptible to colds and other infections. There is, however, a certain degree of immunity produced, but unfortunately this is generally of short duration, whereas the injury may be more or less permanent.

2. During an influenza epidemic, do you recommend spraying the throat or nose?

It is quite possible that spraying the nose and the throat with antiseptic oils may be of some service as a preventive during an epidemic, but the best of all preventives is building up the general resistance, keeping the colon free from residue, and especially staying in the open air.

# Book Notices

## Food for the Sick and the Well—How to Select It and How to Cook It

This is a book of recipes, the result of many years of experience in arranging, changing and adapting them so as to form a well-regulated diet for the sick and convalescents, as well as for those who are well and wish to remain so.

The housewife as well as the physician and the nurse will find in this volume a valuable help and guide. The text discusses the relation of food to health and the necessity of a balanced menu.

An additional section of the book devotes itself to treatments such as baths, sponges, hot-packs, salt-rubs, enemas, douches, etc.

"Food for the Sick and the Well, How to Select It and How to Cook It." By Margaret P. Thompson, Registered Nurse. Price $1.00. Yonkers-on-Hudson, New York: World Book Company.

## Square Peggy

Here is a book of ten brilliant and delightful stories by one of our most popular writers of fiction. These are romances of society's younger set; stories of well-dressed, well-born boys and girls, their play and their folly. For instance, there is "Comrade in Arms," the story of wealthy Elizabeth Griswold, who was bored by parties but loved babies. Once when she had borrowed a friend's baby and was pretending to be a nurse maid, she met a policeman in Gramercy Park. He was quite a wonderful policeman—so wonderful in fact, that, well, Elizabeth simply couldn't forget him. When her family found it out, things were in a terrible state, but Mrs. Bacon can be depended upon to tell an unusual story, and you'll be most surprised at the unexpected way in which things really turned out. This is just *one* story. There are nine others, and each one is full of humor, pathos and love.

"Square Peggy." By Josephine Daskam Bacon. Net $2.00. New York: D. Appleton and Company.

*(Continued on Page 18)*

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Borden's Malted Milk belongs to the Borden family of pure milk products, which have been used by three generations. Its family connections have an additional meaning when its many uses in the home are recalled.

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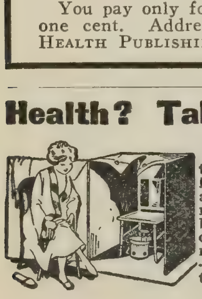

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# Book Notices

*(Continued from page 17)*

## From a Soldier's Heart

Do you know the story of the lone American Regiment which fought on the Italian Front?

Do you know that months after the armistice, American soldiers from that regiment helped put down a revolution in picturesque Montenegro?

Here is a vivid personal experience which will endure—for here are beauty and truth and sincerity.

"From a Soldier's Heart." By Harold Speakman. Net $1.25. New York: The Abingdon Press.

## A Woman Named Smith

To the thousands who read "Slippy McGee" with surprised delight—surprised because the author was comparatively unknown when it was published—it will be necessary only to announce that this is the latest novel by Mrs. Oemler.

To those who have not read "Slippy McGee" the publishers beg to present an author in whose power of entertainment they have the greatest confidence. Mrs. Oemler writes neither slush nor gloom, neither stereotyped romance nor super-sophisticated realism. The world to her is neither a dark, batty prison nor a rose-colored boudoir. It is uphill and downhill, and a pretty good old place to live in. The people of her books are the kind of people you and I and the family around the corner know; sometimes they are bad, sometimes they are good, never are they angels, and always are they interesting. They laugh and cry, work and play. It is a pleasure to know them, and the author makes the reader know them so well that he laughs and cries with them.

"A Woman Named Smith" is set in the South, as was "Slippy McGee." It is a love story, told with charm.

"A Woman Named Smith." By Marie Conway Oemler, author of "Slippy McGee," etc. New York: The Century Company.

# LISTERINE

Listerine is a saturated solution of boracic acid and volatile antiseptic oils—complete formula stated on package—it may be diluted with water without precipitating its constituents—being non-poisonous and unirritating, it has a wide range of usefulness—

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In all cases of fevers, where the patient suffers so much from a parched condition of the mouth, a few teaspoonfuls of Listerine in a glass of water provides a refreshing and effective mouth-wash.

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"IT'S ALL IN THE SHREDS"

# EDITOR'S QUESTION BOX

*12,266. Proper Lamp for Studying—Moving Pictures Tire the Eyes.—L. M. O., Michigan.*

1. Is it not true that the light from the old-fashioned student lamp fed by kerosene is better for the eyes than any kind of electric light, even over-head lighting?

*Ans.* No. There is no better light than a properly arranged electric light. Care should be taken, however, to avoid exposure of the eye to the incandescent film or the dazzling brilliance of an arc light.

2. When moving pictures tire the eyes, is it a sign that one needs glasses, or is there some condition of the eyes that probably needs special treatment?

*Ans.* Moving pictures are tiresome to all eyes because of the constant flicker. It is possible, however, that your eyes may have some optical or other defect. It would be well to have them examined by a competent oculist. Do not consult an optometrist but a regular oculist who has a thorough knowledge of the eyes.

*12,267. Care of the Hair.—E. D. Q., Ohio.*

Is it well to shampoo the hair with very hard water, and if so, what can be used to keep the hair from feeling harsh and dry? Do you think it is well for the health of the hair to cut it short when a woman is more than thirty years old?

*Ans.* No. Hard water used in connection with soap will leave behind a curdy residue of insoluble soap which will be of damage to the hair and will increase the tendency to accumulate dust. Only soft or distilled water should be used for the hair. The water may be softened by the addition of carbonate of lime and carbonate of soda. An examination by a compentent chemist is necessary to determine the amount of lime and soda which must be added.

*12,268. Very Soft Teeth. Artificial Teeth.—M. E. S., Massachusetts.*

When the family history shows that the teeth decay easily, and are very soft, is it not well to resort to artificial teeth? Dentistry has proved useless. Nothing seems to harden the teeth, and yet the general health is good.

*Ans.* Several things are necessary:

1. See that the bowels move thoroughly three times a day.

2. Increase the food lime in the dietary by making free use, at least once a day, better twice a day, of greens of some sort.

3. Care for the teeth by means of the Hyg-os. For information address the Hyg-os Company, Battle Creek, Michigan. Carefully follow the directions given.

*12,269. Radium and the Conditions for Which It Is Used.—E. M. L., Indiana.*

Will you please tell me how Radium is best administered, and for what conditions it is now used by the best physicians?

*Ans.* Radium is best administered by a radiologist. It is too subtle and powerful an agent to be used by any one who is not an expert.

*12,270. Goitre.—J. H. K., Montana.*

We hear that goitre is caused by the kind of water used for drinking purposes. Just what is the quality of water that is supposed to cause goitre? If it is due to hard water, how can the water be properly softened with safety?

*Ans.* There are two forms of goitre, exophthalmic goitre and cystic goitre and oedema of the thyroid gland. There is reason for believing that the latter form of the disease is due to infection contracted through the use of contaminated water. It is not due to hard water. Exophthalmic goitre is one of the consequences of chronic autointoxication or infection of t colon. It is possible that diseased teeth and other focal infections may give rise to this disease. Hard water usually contains both carbonate of lime and sulphate of lime. The carbonate of lime may be removed by the addition of a suitable amount

*(Continued on page 14)*

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## Editor's Question Box

(*Continued from page 12*)

of quick lime. The sulphate of lime requires carbonate of soda. The amounts of these chemicals required can only be determined by a chemical analysis of the water.

*12,271. Botulism.—L. M. R., California.*

How can one tell whether canned foods will cause botulism or not? Can the injurious properties be detected by appearance or odor? Are there any kinds of canned goods exempt from this possible poisonous property?

*Ans.* Botulism is fortunately a very rare disease. Canned meats and canned fish are much more likely to be infected than canned vegetables. Of canned vegetables, beans are almost the only sort at all likely to be open to suspicion. If, on opening a can, the contents are found to have the slightest appearance of being spoiled or fermented or having undergone any other change, they should be rejected.

*12,272. Ulcer of the Stomach.—R. R. H., Canada.*

Is an operation for ulcer of the stomach usually necessary? What is meant by the "rest and feeding-tube treatment?" About how long does one take this last treatment? Would it not be always well to try this treatment before resorting to an operation?

*Ans.* Operations for ulcer of the stomach are not usually undertaken by reliable surgeons until after non-surgical measures have been faithfully tried. One eminent surgeon makes it his rule to operate only after the patient has been cured nine times by other means. By exercising sufficient care in diet the cure once accomplished may be maintained in most cases of ulcer of the stomach, but there are few people who will for a long series of years exercise this necessary care, and one or two digressions may be sufficient to bring back the disease. Unfortunately an operation is not a certain cure. A certain proportion of patients continue to suffer after operation. In most cases this may be due to neglect to adhere to a proper dietary. The patient should follow the same dietary necessary for a permanent cure without operation.

# Book Notices

## The Black Drop

"He had a black drop in his blood, God knows where he got it!" This is the keynote of Miss Brown's new story. In a family all of whose members are cultivated, kindly, and loyal, there is one, perhaps the strongest personality in ability in force, who is unprincipled, ambitious for money and station, and a dangerous enemy of society. It is he who precipitates the problem of the novel. His nefarious scheming gives rise to a series of dramatic incidents, which lead inevitably to a climax involving a brother, a father and mother, a wife and grandfather. It is a moving climax; never has Miss Brown's skill as a word artist been more surely, more convincingly demonstrated.

"The Black Drop." By Alice Brown. Net $2.00. New York: The MacMillan Company.

## The Woman of Forty

It has been said that the middle years of a woman's life are wasted more than any of our national resources. This should not be; for the women of forty are the women of mature understanding and ripe judgment, still possessing abundant health and strength. As Dr. Lowry says, most of the world's great women have been past middle life when they performed the achievements which made them famous. Every woman in the forties who wishes to be at her best and desires mental and physical growth should read this sensible book. It is a book physicians will recommend to their patients.

This is the tenth volume of the famous sex hygiene books by Dr. Lowry, which have become famous throughout the world because they give the fundamentals of health in such a clear, reliable way. The new work will be read with profit by thousands of women.

"The Woman of Forty." By Dr. E. B. Lowry. Net $1.25. Chicago: Forbes and Company.

(*Continued on page 18*)

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Borden's Malted Milk offers in a partially predigested form the food values of pure milk and strengthening cereals.

This partial predigestion is brought about by the improved, exclusive Borden process of manufacture, whereby malt ferments acting upon the protein elements of the milk and cereals, convert them to partial peptones.

Borden's Malted Milk is therefore the ideal food-drink for all the family—as a between-meal snack—a light lunch—to supplement the regular diet—as a bed-time drink.

It is nourishing and invigorating, and supplies the tissue-building proteins of milk and cereals in a form that is palatable and readily digestible—by children, invalids and the aged—by everybody.

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**Lenna F. Cooper, B.S., Dean.**

**The Sanitarium School of Home Economics**

24 Administration Bldg.

**BATTLE CREEK - MICHIGAN**

## Book Notices

(*Continued from page 17*)

### What to Drink

This book contains the recipes of practically all the favorite non-alcoholic drinks that have tickled the palates of thirsty mortals, and, in addition, many equally delectable new concoctions. Mrs. Stockbridge not only teaches you how to brew all those beverages dear to the palate of the most fastidious, but shows you how to serve them most attractively.

The drink that makes the picnic jolly and the guest happy—the drink that tempts the invalid and revives the tired tramper, the drink to make you toasty on the nipping day, and cool when the thermometer goes up and up, the drink for the children's party and the grown-ups, the drink for out-doors and in-doors—for the woods, the porch, the play room, the living room, the smoking room and the dining room. The drink for breakfast time, lunch time, tea-time, supper time, bed time, between time—the drink for all tastes at all times in all places—all, all are revealed.

"What To Drink." By Bertha E. L. Stockbridge. Net $2.25. New York: D. Appleton and Company.

### Yours for Sleep

"God bless the man who invented sleep," said Sancho Panza, and people living in the high tension of the twentieth century are coming more and more to agree with him and realize the important part played in their lives by sleep as experience reveals what lack of it does for them. It is, or should be, as natural to rest the bodily organs as to use them.

In this non-technical authoritative handbook the author makes a broad and careful inquiry into the causes of insomnia and gives common-sense practical directions for its alleviation and cure.

"Yours for Sleep." By William S. Walsh, M. D. Net $2.50. New York: E. P. Dutton & Company.

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**for youngsters whose bodies are made strong and sturdy by rational exercise and proper food. The boy that is stuffed with foods that have been robbed of mineral salts is a dull boy.**

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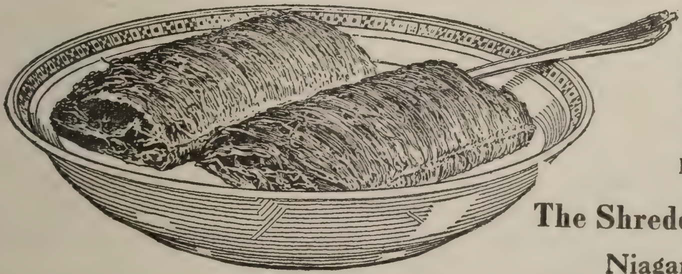
**is the perfect food for growing children because it contains all the brain-making, tissue-building material in the whole wheat grain. A breakfast of two Shredded Wheat Biscuits with hot milk gives a zest for study and play—costs only a few cents.**



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# EDITOR'S QUESTION BOX

*12,282. Brand Baths in Typhoid Fever.—E. S. D., California.*

Brand baths used to be given in typhoid fever. Is this measure still advocated, and please describe a Brand bath?

*Ans.* The Brand bath is less used than formerly in the treatment of fevers. It is simply a full bath at a temperature of 60° to 70° F. in which the patient is placed and vigorously rubbed for 10 or 15 minutes. It is found that the temperature may be reduced by water at a somewhat higher temperature, which is now more commonly used.

*12,283. Hyperacidity and Constipation.—Hot or Cold Water in Hyperacidity.—W. W. G., Indiana.*

1. How can a person with an extreme case of hyperacidity combat constipation, when tomatoes, fruits and bran are excluded from the diet? Mineral oil is so nauseating it cannot be taken.

*Ans.* There is no reason why bran should be excluded from the dietary in such cases. However, agar may be used in its place. A solid mineral oil which melts at the temperature of the body, commercially known as Paramels, may be used instead of the ordinary oil, or an emulsion of paraffin oil known as Paralax, which may be taken with as little inconvenience as milk or water.

2. Should the hyperacidity patient drink hot or cold water, and how much of it?

*Ans.* One or two cups of hot water may be taken an hour before meals with advantage.

*12,284. Eyes Affected by Use of Tobacco—Medicine for Tobacco—Poisoned Man.—W. E. Y., Montana.*

1. If a man's eyes have been affected by long use of tobacco, and if the tobacco habit is given up, is there a chance for the eyesight to become normal again?

*Ans.* Yes. In the majority of cases tobacco blindness is cured by discontinuance of the tobacco habit.

2. Is there any special medicine, food or hygienic means especially adapted to a tobacco-poisoned man?

*Ans.* Yes. An antitoxic diet, that is, a diet from which meats of all sorts are excluded, together with condiments, and which contains enough bran and other laxative foodstuffs to secure three evacuations of the bowels daily. The free use of fruits is especially indicated.

*12,285. Common Cause of Epilepsy.—E. L. S., Connecticut.*

What do nerve specialists consider the most common cause of epilepsy? Is this always a progressive disease? What is the percentage of cases cured?

*Ans.* The most common cause of epilepsy is heredity. The disease is usually progressive. Very few cases of congenital epilepsy are cured. When the disease is the result of autointoxication, it may often be cured when not of too long standing.

*12,286. Gasoline Fumes.—H. S. D., Indiana.*

Is it possible for gasoline fumes from a nearby garage to poison residents in the vicinity? Headaches, nausea and other disagreeable symptoms make me feel that I have been so poisoned. The strong fumes are noticeable day and night.

*Ans.* We know of no exact scientific observations which afford a basis for an answer to this question. Certainly smoke fumes are always more or less poisonous.

*12,287. Carbonated Waters.—A. L. B., New Jersey.*

Do you consider carbonated waters harmful? I often drink the plain soda water without syrups, and it seems to refresh me.

*Ans.* No. Simple water containing carbon dioxide is entirely harmless.

*(Continued on page 14)*

## Getting Husky, Son—
## Grape-Nuts Agrees!

This delicious wheat and malted barley food provides, in easily digestible form, essential elements Nature requires for growth, health and strength.

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Nerves All Out of Tune?

Jangled nerves are the things that take the joy out of life. You cannot do your bit in any walk of life if your nerves go wrong. What you want to do is to get yourself in shape to do your utmost. *Of course you can.*

If you will get the right habits of living, you will be delighted and amazed to see how quickly your nerves will respond. *It is easy* to live in the right way.

It is no sacrifice to give up eating, drinking, and thinking poison. In ninety-nine cases out of one hundred, people whose nerves do not co-ordinate are hoarding poison in their bodies and the result of this is the condition that the wise men call "Neurasthenia."

Steady nerves, poise and self-control — are largely a matter of nourishment and natural living. This the author fully explains in his book "Neurasthenia." This book is not dry and technical. On the contrary, it is intensely interesting, and easy to follow. If you suffer from nervousness, exhaustion, or sleeplessness, send for this book and study it. It teaches you how to recover from nervous suffering. Instructions are full and complete. Over 300 pages—many illustrations—substantially bound—only $2.

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Modern Medicine Pub. Co.,
86 N. Washington Ave.,
Battle Creek, Mich.

Enclosed find $2.00 for which send me Dr. Kellogg's book "Neurasthenia."

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*Address* ......................................................

..........................................................................

## Editor's Question Box

(Continued from page 12)

*12,288. Shingles.—F. G. Y., Iowa.*

Q. What is the cause of shingles, and what is the best treatment?

*Ans.* Shingles is a nervous disorder due to infection. Your doctor will outline the treatment your case requires.

*12,289. Correct Diet When Gastric Juices Have No Acidity.—E. B., Florida.*

What diet should be followed when the gastric juices seem to have no acidity? Is there any remedy that will produce the right amount of acid?

*Ans.* Acid fruits should be very freely used. A remedy known as Acidone, which consists of hydrochloric acid combined with vegetable protein, is the only remedy with which we are acquainted that has any value. This is recommended to be used at every meal and to be continued for an indefinite time. ,

*12,290. Bacillus Acidophilus.—C. H. R., New York.*

What is the *Bacillus acidophilus,* and what effect does it have on digestion?

*Ans.* The *B. acidophilus* is a friendly germ which produces lactic acid, like the germs which cause the souring of milk. It is closely related to the *B. Bulgaricus,* but is superior to this germ for the reason that it is able to live and thrive in the colon.

*12,291. Fruit and Nuts in the Dietary. —J. F. F., Pennsylvania.*

1. Do fruits and nuts constitute a complete dietary?

*Ans.* Fruits and nuts are hardly safe as an exclusive diet. It is true it would be possible to live fairly well on fruits and nuts, although one should take just the right kind of fruits and nuts and in sufficient variety. Of fruits, dates and figs would have to be the staple, and for nuts, almonds and peanuts; but such a diet is not practical.

The higher apes do not confine themselves to fruits and nuts. They live on fruits, nuts, succulent roots and the tender green shoots of various plants. The green leaf contains something essential for health.

# Book Notices

## The Use of the Story in Religious Education

The author says in her "Foreword": "Because I have longed to help teachers and workers with boys and girls in Religious Education Work, I have written this book. It is for those who are eager to know 'How.' I have given lists of stories and have divided the book in such a way that it can be used in classes in story telling work in our Community Schools and Colleges where the demand is growing for such classes."

Sunday School Teachers, Recreational Leaders, Camp Fire Guardians, Scout Masters, Mothers and Elder Sisters will each find chapters devoted to the type of stories they need for all the varying occasions. This book by a recognized expert in the art of Story Telling will be found an indispensable help in the selection and preparation of the right story for the right time and place.

"The Use of the Story in Religious Education." By Margaret W. Eggleston (Instructor in Story Telling in the School of Religious Education and Social Service of Boston University). New York: George H. Doran Company.

## Going Afoot

Many will gain from this little book a new appreciaton of "the joys of the road." They will find its suggestions on how, when, and where to walk practical and helpful, and read with interest the accounts of famous walking clubs in America and the directions for the organization and conduct of such a club.

"Going Afoot." By Bayard H. Christy. New York: Association Press.

## Hills of Han

Whoever has read Mr. Merwin's earlier stories of the China Coasts will welcome the knowledge that in this new novel he has returned to the land of ancient wonder.

The China Mr. Merwin knows is the China teeming with life, shrouded in mys-

*(Continued on page 18)*

Milk For Adults

The inclusion of a goodly amount of milk in one's diet should not end with childhood. In the adult ration, the lack of the important "vitamines" contained in milk, easily may be the cause of an undernourished condition, not noticeable at once but leading to later troubles.

Some people cannot drink fluid milk. With others it does not agree. To such we recommend the liberal use of Borden's Eagle Brand, on cereals and fruits and in coffee and cocoa. It will be found to be agreeable to the most sensitive digestion. And it adds a deliciousness to flavor in whatever way used. Eagle Brand contains all the food properties of pure milk. Prepared solely of milk and sugar; in definite, standardized proportions.

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HOME ECOMOMICS AND DIETETICS have received added impetus since the World War because of the awakening of the medical profession to the fact that a woman trained along these lines is an indispensable part of the hospital personnel; also because of the fact that the laity have come to realize more than ever the importance of Home Economics training for every young woman in order that she may direct, and teach others to direct, intelligently and efficiently their own households and the larger households—the institutions.

With this purpose in mind, the BATTLE CREEK SANITARIUM SCHOOL OF HOME ECONOMICS is offering two professional courses, *i. e.*, for TEACHERS and for DIETITIANS.

THE TEACHERS' COURSE fits one for teaching Home Economics in public and other schools.

THE DIETITIANS' COURSE of two years fits one for institutional work in hospitals, dormitories, hotels, clubs, schools, orphanages, cafeterias and lunch rooms in factories, Y. W. and Y. M. C. A.'s and office buildings—for the position of Laboratory Technician and Extension and Social Service work.

Graduates of both courses are filling high salaried, responsible positions in all parts of the country. The demand the past year for Dietitians and Teachers of Home Economics has been greater than could be met.

In addition to the high scholastic standard, students enjoy refined companionships, pleasant surroundings, and the many advantages of the Sanitarium with which the school is affiliated. For those who enjoy athletics there is boating, swimming, skating, tennis, and other sports.

Opportunities are offered students to defray a part of their expense. Tuition and living expenses are moderate. For illustrated prospectus, giving full outline of curricula, terms and entrance requirements, address:

REGISTRAR

**The Sanitarium School of Home Economics**

**26 Administration Building**

BATTLE CREEK - MICHIGAN

## Book Notices

(Continued from page 17)

tery, silent, subtle, with portentous undercurrents, now and again rising to the surface and threatening the "honorable" political and social structure.

When Mr. Merwin was in China a dozen years ago, he experienced a number of the incidents and met several of the characters that make the "Hills of Han" so absorbingly realistic.

But the drama—and the story is essentially dramatic—came to him only recently, when the vivid pictures and the stirring events had, by time and distance, assumed their true colors and their rightful proportions.

"Hills of Han." By Samuel Merwin. Indianapolis: Bobbs Merrill.

### Wyndham's Pal

Bindloss is at his best in this romance of adventure, intrigue and achievement in the dark lagoons of the Caribbean. Vital characters and glowing setting combine with strong elements of mystery and suspense to make a story that is alive through every page.

Harry Wyndham, a young Englishman facing the task of restoring the fallen fortunes of his ancestral trading firm, is made of the stuff that proves the spirit which sent out the old adventurers is living yet. He is ambitious—doubly so because winning the girl he loves depends on his success. This ambition, coupled with a love of danger, leads him far before it brings him home a better man than when he started out. Crossing the Atlantic in the old slavers' track, he throws himself into a dangerous and mysterious trading game, and his adventures among the fever-haunted mangrove swamps of the Caribbean prove that though " the world is alike on the lines of latitude, man's morals follow the parallels."

"Wyndham's Pal." By Harold Bindloss, author of "Partners of the Out-Trail," "The Buccaneer Farmer," etc. New York: Frederick A Stokes Company.

# LISTERINE

Listerine is a saturated solution of boracic acid and volatile antiseptic oils—complete formula stated on package—it may be diluted with water without precipitating its constituents—being non-poisonous and unirritating, it has a wide range of usefulness—

**As a wash and dressing for wounds;**
**As a gargle, spray, or douche;**
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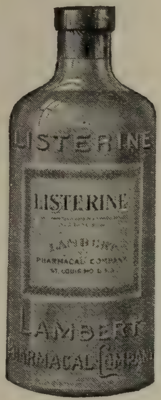
**As a deodorant and antiseptic lotion.**



Cuts, scratches or abrasions heal quickly under the antiseptic protection of Listerine, as it does not destroy tissue cells or retard the natural processes of repair.

As a face lotion, after shaving, the application of Listerine allays irritation and promotes the healing of an abraded or otherwise injured surface of the skin.

In all cases of fevers, where the patient suffers so much from a parched condition of the mouth, a few teaspoonfuls of Listerine in a glass of water provides a refreshing and effective mouth-wash.

Listerine has so many uses in the home that the family medicine cabinet is incomplete without a bottle.

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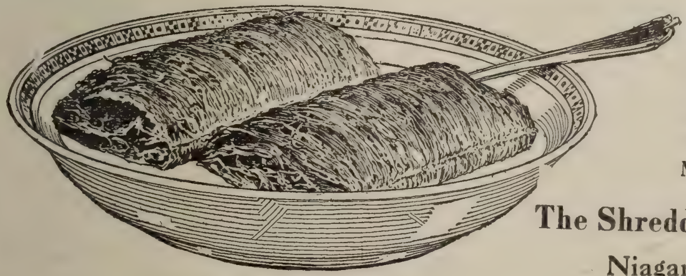
---

# For a Toppy, Tasty Breakfast

that puts you on your toes, mentally and physically: Heat two

# Shredded Wheat Biscuits

in the oven (to restore their crispness); pour hot milk over them; salt or sweeten to suit the taste. If you don't like milk, pour hot water over the Biscuits, drain off the water, place a small bit of butter on each. The tasty goodness of the baked whole wheat is a joy to the palate and supplies all the nutriment needed for a half day's work.



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# EDITOR'S QUESTION BOX

*12,273. Protein in American Cheese—Alkalinity of Blood and Body.—T. M. S., Dist. of Columbia.*

1. Is protein in American cheese a complete protein? Are vitamins usually preserved in American cheese?

*Ans.* Yes. The protein of cheese is a complete protein. It is, in fact, superior to the protein of meat. The vitamins found in milk are also found in cheese.

2. Do American cheese and cottage cheese increase or decrease the alkalinity of blood or body?

*Ans.* Milk is nearly neutral as regards its reaction, neither increasing nor decreasing the alkalinity of the body fluids. The same is true of cottage cheese and cream cheese. Old or strong cheese, however, contains a considerable amount of butyric acid and on this account is objectionable.

3. Which is more liable to putrefaction in the intestines—American cheese or cottage—both fresh?

*Ans.* American cheese.

*12,274. Bromide and Sleep-Producing Medicines.—R. F. W., Maine.*

Is bromide a habit-forming drug? What is the least harmful of the sleep-producing medicines prescribed by physicians in extreme nervousness and sleeplessness?

*Ans.* The habit of taking bromides, especially bromide of seltzer and similar drugs, is sometimes formed and results in great injury. All the sleep-producing drugs are about equally harmful. There is no drug which will temporarily relieve nervousness or sleeplessness which is not injurious. These drugs secure temporary relief by benumbing nerve sensibility. After the effect of the drug is gone, the condition of the patient is worse than before. Nervousness and sleeplessness should be relieved by the removal of the cause. A warm bath at bedtime, ninety-two to ninety-six degrees for thirty minutes or more, is one of the best means of relieving sleeplessness, and the bath may be taken at any time for the relief of nervousness, and usually with excellent effect.

*12,275. Mastoiditis.—A. M. D., Illinois.*

What causes mastoiditis, and is it always necessary to operate to cure the disease?

*Ans.* Mastoiditis is due to infection. The condition is usually an extension of infection from the middle ear. When the disease has become fully developed, an operation is the only safe course, as there is much danger that the infection may extend to the cranial cavity. The writer many years ago encountered a case of this sort in which the condition was neglected and an abscess developed within the skull, making it necessary to trephine the skull. The patient made, in time, a good recovery, but incurred a risk to his life which was quite unnecessary and hence unwise.

*12,276. Rheumatic Iritis.—H. L. Y., New York.*

What is the cause of the condition called rheumatic iritis? How does it differ from iritis? Does it ever cause loss of sight?

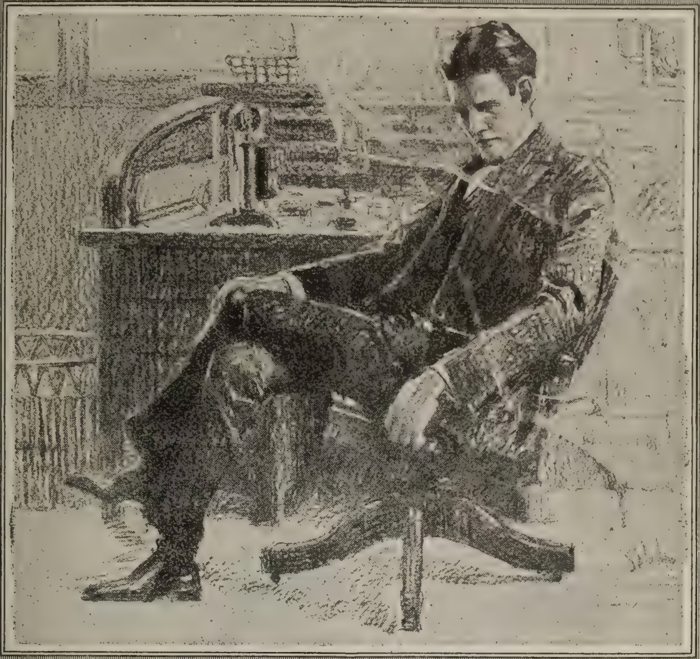
*Ans.* Rheumatic iritis is a form of iritis which may be associated with rheumatism or may be the result of local infection. It may result in impairment of vision.

*12,277. Urine and the Kidneys.—E. D. R., Illinois.*

If urine is clear straw color, no bad odor, and somewhat less than two quarts voided per day, is it not a good indication that the urine and kidneys are all right?

*Ans.* The general appearance of urine such as described would indicate health. However, the general appearance is liable to be deceptive. A chemical and microscopical examination might show evidence of disease.

(*Continued on page 14*)



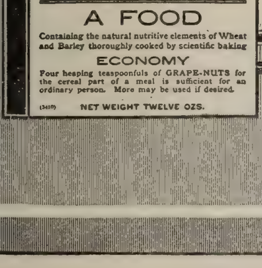
# MENTAL FOG

Most mid-morning or afternoon let-downs come from wrong food

Why not eat that sustaining and easily digested wheat and barley food —

## Grape-Nuts

*"There's a Reason"*



CUT HERE

Run a sharp knife along the dotted line and squeeze edges to make it gap. See that the gap is closed after the required amount of food is poured out. Don't cut top off.

**Grape-Nuts**

REGISTERED IN UNITED STATES PATENT OFFICE

A Compound made of Wheat, Barley, Salt and Yeast.

MANUFACTURED BY

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A FOOD

Containing the natural nutritive elements of Wheat and Barley thoroughly cooked by scientific baking

ECONOMY

Four heaping teaspoonfuls of GRAPE-NUTS for the cereal part of a meal is sufficient for an ordinary person. More may be used if desired.

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**STATEMENT OF THE OWNERSHIP AND MANAGEMENT OF GOOD HEALTH MAGAZINE, published monthly at Battle Creek, Michigan.**

Editor, J. H. Kellogg, M. D.; Business Manager, M. Kent, M. D.; Publisher, Good Health Publishing Co.; all of Battle Creek, Mich.

The Good Health Publishing Company is not a stock corporation, but is incorporated under the provisions of Act 20 of the Public Acts of 1855 of the State of Michigan—an Act for the Incorporation of Charitable Societies and acts lawfully amendatory thereto. The board of trustees are: J. H. Kellogg, Chairman; C. D. Rhodes, Treasurer and Secretary; Jas. T. Case; W. F. Martin, G. C. Tenney.

**M. KENT, M. D., Business Manager**

Sworn to and subscribed before me this 1st day of April, 1920. Pearl Norton, Notary Public, Calhoun County, Mich. My commission expires July 14, 1923.

## Editor's Question Box

(*Continued from page 12*)

*12,278. Malt Syrup—Nuttose and Nuttolene.—E. E. S., Michigan.*

1. How much Meltose or commercial malt syrup can the average person eat per day without injury?

*Ans.* The amount of malt sugar that can be consumed without injury per diem depends upon the amount of other carbohydrates eaten. Sixteen to eighteen ounces of carbohydrates is about the right proportion in a well-balanced dietary. One-fourth of this might be in the form of malt syrup without injury.

2. Are Nuttose and Nuttolene complete proteins?

*Ans.* Yes.

*12,279. Elimination of the Skin.—M. L. W., Missouri.*

How can one be sure that the skin does the normal amount of elimination in moderately cool weather when one does not perspire?

*Ans.* If the skin is healthy in appearance and has the benefit of the daily cold bath followed by vigorous rubbing, it can be depended upon to do its normal part of the body work.

*12,280. Trichina.—R. M. K., Wisconsin.*

We used to hear a good deal about trichina in pork. At the present time, are cases of trichina infection common? Is such a condition curable and what methods are used to cure the infected person?

*Ans.* Trichina infection of pork has become so nearly universal that it is taken for granted that all pork contains this loathsome parasite. The United States Government has warned the people of the United States that all pork is likely to contain the parasite, and hence that pork should be thoroughly cooked.

*12,281. Proper Amount of Tomato Juice for an Infant.—F. E. J., Ohio.*

When it is not possible to have orange juice, how much tomato juice should be given an infant? Should it be given cold or warm?

*Ans.* From half an ounce to two or three ounces daily, according to age. Warm.

# Book Notices

## Little Miss By-The-Day

It is refreshing to come upon a piece of fiction that is *new*—one that cannot be mentally linked up with others more or less recent. There is an originality, a freshness, distinctly its own about this novel of little Miss By-the-Day, whose bewitching personality reaches far beyond the pages of the book to carry the reader entranced through chapter after chapter of charming romance.

Imagine an extraordinary little person, who has learned to speak English only with a French accent,—although she knows no French; who, up to her seventeenth year, had never gone beyond the garden gate of her country home, and never learned the meaning of death; whose education was limited to know how to curtsy, to dress her hair in the manner of the French Court, and to play a phenomenal game of chess.

This is Felicia Day as she was when she returned to her childhood home in Brooklyn—a Brooklyn where shabby houses had sprung up beside stately, crumbling mansions; where Sicilians and Armenians swarmed instead of the children of old—to undertake the formidable task of lifting the taxes and mortgages that had brought the old house to the indignity of public auction placards. What follows makes a story breath-taking in its surprises, heart-warming in its romance, captivating in its elusive, penetrating charm.

"Little Miss By-the-Day." By Lucille Van Slyke. Net $1.50. New York: Frederick A. Stokes Company.

## As Others See Her

The author of this book, an English woman, was a co-worker of Mr. Herbert Hoover in feeding the starving Europeans. She made a trip to this country, and talked to many gatherings of people about the necessity for food conservation in order that the needed supplies might go across the water. In her American travels, she met, and was entertained by, all kinds of

(*Continued on page 18*)

A Malted Milk for Children

Borden's Malted Milk is a liquid food of high caloric value. Rich, clean milk and sustaining cereals, and enough mineral salts for bodily nerve and tissue building are processed together in the exclusive *Borden* way.

It is a superior food for children because the action of the malt ferments converts the casein of the milk into a partial peptone. Complete digestion and ready assimilation are greatly facilitated. As a spread for bread it is relished by children.

Serve it for lunch—it is nourishing and inexpensive. Then, too—as a beverage, or sprinkled over ice cream, or served piping hot at night to soothe tired nerves—Borden's Malted Milk is satisfying and sustaining.

Sold at better groceries and drug stores.

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**THE HOMEMAKERS' COURSE** of one year is planned for young women not desiring a professional training, and includes such subjects as Physiology, Cookery, Care of the House, Marketing, Sewing, Millinery, Dietetics, Home Nursing and Basketry.

**THE TEACHERS' COURSE** of two years fits one for teaching Home Economics in public and other schools. Graduates of this course are holding responsible positions.

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Lenna F. Cooper, B.S., Dean.

**The Sanitarium School of Home Economics**

25 Administration Bldg.

**BATTLE CREEK - MICHIGAN**

## Book Notices

(*Continued from page 17*)

American women. Mrs. Burnett-Smith gives her impressions of her entertainers and her audiences in a most delightful way, and we wish every woman might read this book. The author has very well probed the foibles and also the excellent qualities of American women.

"As Others See Her. An Englishwoman's Impressions of the American Woman in War-Time." By Mrs. A. Burnett-Smith. New York: Houghton Mifflin Company.

### Every Step in Canning

Before the war, housewives had lost the good habit of canning, preserving and pickling; but the war taught us thrift, and a great garden and canning movement swept over the whole country, and in consequence a host of women are preserving foods who never canned before. This enthusiasm was a result of new canning methods which proved so satisfactory that every home-canning recruit will continue to preserve foods. Home-canning has come into its own because of the war, and has come to stay because of the many merits of the new cold-pack method. The fascination of doing one's own canning after one has learned how simple and economical it is will be lasting.

The new system explained in this book makes canning a joy; it saves labor, time and fuel, and by eliminating spoilage it prevents waste of food. "Every Step in Canning" not only gives complete instructions for canning in glass and tins but also gives full directions for preserving all foods in every form,—by brining, drying, smoking and storing.

Those interested in good food and greater efficiency in the home should not delay in obtaining this important book. It will reduce the cost of living and increase health and happiness by providing more wholesome and better tasting food.

"Every Step in Canning." By Grace Viall Gray. Net $1.25. Chicago: Forbes and Company.

# LISTERINE

Listerine is a saturated solution of boracic acid and volatile antiseptic oils—complete formula stated on package—it may be diluted with water without precipitating its constituents—being non-poisonous and unirritating, it has a wide range of usefulness—

**As a wash and dressing for wounds;**
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Cuts, scratches or abrasions heal quickly under the antiseptic protection of Listerine, as it does not destroy tissue cells or retard the natural processes of repair.

As a face lotion, after shaving, the application of Listerine allays irritation and promotes the healing of an abraded or otherwise injured surface of the skin.

In all cases of fevers, where the patient suffers so much from a parched condition of the mouth, a few teaspoonfuls of Listerine in a glass of water provides a refreshing and effective mouth-wash.

Listerine has so many uses in the home that the family medicine cabinet is incomplete without a bottle.

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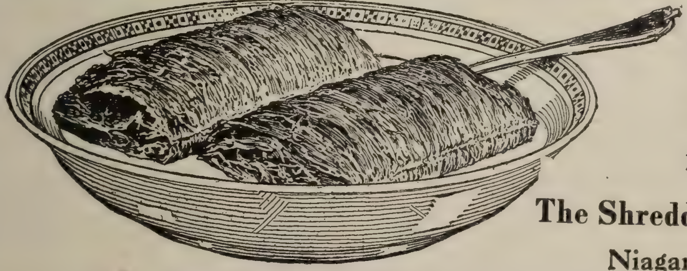
# Lazy Boys and Girls

Don't scold them—the chances are they are undernourished. They have plenty to eat, but not enough real food—the kind that builds bone, tissue and brain.

# Shredded Wheat Biscuit

is *all* food. It is 100 per cent whole wheat, nothing wasted or thrown away. It is a food that gives strength and health to youngsters and grown-ups. A boon to mothers because so easy to serve. Two of these little loaves of baked wheat with hot milk make a nourishing meal.



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# EDITOR'S QUESTION BOX

*12,293. Medical Value of Yeast.—W. D. A., Ohio.*

What is the medical value of yeast?

*Ans.* The only value of yeast is that it supplies water-soluble vitamins. These are a useful addition to the diet when it is deficient, but the water-soluble vitamins are present in abundance in dietaries consisting of whole grains, fresh vegetables, potatoes and fresh fruits.

A person living upon a diet of fine flour bread, polished rice, bacon, canned or dried meats, fruits and vegetables, depending upon lard, oleomargarine, nut margarine and similar foods, will suffer from a deficiency of vitamins, and might be benefited by adding yeast, but a person who lives upon an ordinary healthful dietary will obtain an ample supply of essential vitamins without resorting to yeast. Yeast is not likely to do any harm. The yeast ferments will not live in the alimentary canal. If the stomach produces a normal amount of acid, the yeast will be destroyed in the stomach but, in any case, it will not grow in the intestines, and so is not likely to do any harm.

*12,293. Dandelion as a Green Food.—E. M. W., Michigan.*

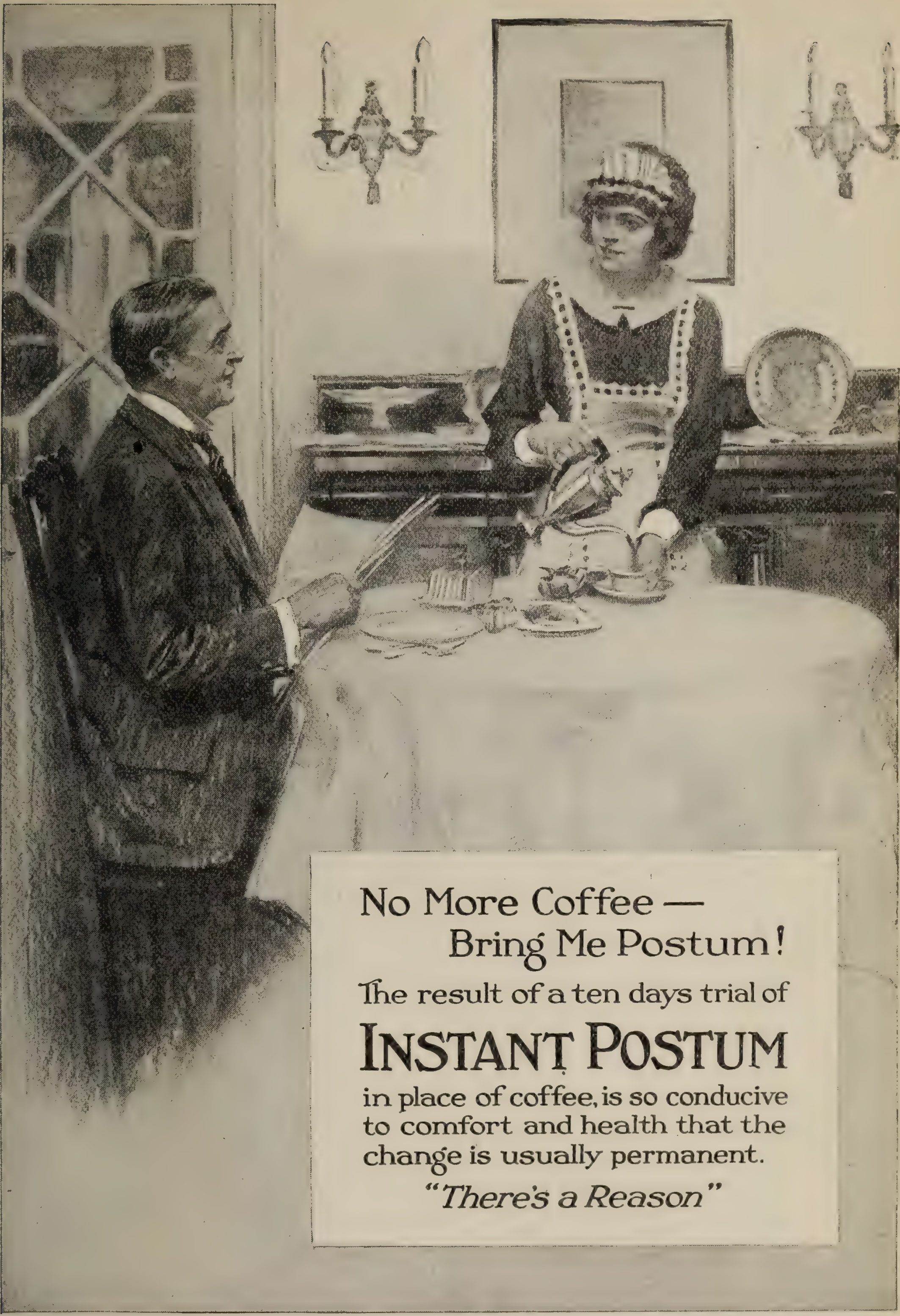
Do you recommend the dandelion as a green food?

*Ans.* Yes. Few people are aware of the fact that the humble dandelion which grows only too luxuriantly in our lawns and uncultivated fields is a valuable food, though one which is usually allowed to go to waste. Instead of regarding the dandelion as a pest and seeking to exterminate it, we should cultivate it in our gardens and give it a conspicuous place on our bills of fare. The dandelion affords an unusually rich store of three food essentials in which most of our ordinary foodstuffs are deficient; viz., iron, food lime, and that remarkable growth-promoting hormone, the so-called fat soluble A, a subtle vitamin without which normal growth is impossible, and which is notably deficient in meat, cereals, most vegetables, and in all foods, in fact, except milk and other dairy products, yolk of egg, and greens. Though these properties of the dandelion are shared by other greenstuffs, few are so rich in these elements as is this humble dooryard weed. Of food iron, the dandelion contains as much as spinach, while affording fifty per cent more lime. Compared with lettuce, it contains four times as much iron and two and a half times as much lime. Besides, the dandelion is a very excellent form of roughage. Its free use is an excellent means of combating constipation.

*12,294. Substitute for Orange Juice.—M. W. Y., Indiana.*

What will take the place of orange juice when oranges are not obtainable?

*Ans.* A research conducted at the Leister Institute of London has shown that the juice of the swede turnip is practically equal in value to lemon or orange juice in preventing scurvy. Lime juice has only one-fourth the value of lemon juice. The juice of carrots or beets has only one-tenth the value of orange juice. Tomato juice or purée has also recently been found to possess nearly the same value as orange juice. These facts are highly important, since oranges are not always obtainable and are generally high in price. Everybody can afford turnips and tomatoes. Infants fed on sterilized cow's milk (and no other is safe) should receive daily two to four ounces of orange juice or swede juice. One-fourth dram of dried tomato pulp was found sufficient to protect guinea pigs from scurvy by Givens and McCollum.



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**An annual Survey and Review** describing PRIVATE SCHOOLS of all classifications and SUMMER CAMPS for Boys and Girls.

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**PORTER E. SARGENT**
**14 Beacon St. Boston, Mass.**

# Editor's Question Box

*(Continued from page 12)*

*12,295. Whole Wheat.—G. G. M., Ohio.*

Does whole wheat, the whole grain, soaked and boiled until perfectly tender, contain everything the human system requires?

*Ans.* No. The wheat grain does not supply the needed elements in proper proportion, as it contains a smaller proportion of fat than is required by an ideal ration.

*12,296. Green Fruit.—S. N. O. Ontario.*

Are very green apples, pears, etc., rendered wholesome by cooking?

*Ans.* Very green fruit should not be eaten in any form. Cooking, however, to some extent takes the place of the natural process of ripening.

*12,297. Substitutes for Meat and Eggs. —L. N. B., New York.*

What vegetable foods should take the place of meat and eggs?

*Ans.* As a matter of fact, no substitutes for meat and eggs are needed. When freely eaten, eggs and meat generally introduce into the diet a surplus of protein which can be dispensed with not only without injury but with very great profit. Ordinary vegetable foodstuffs contain all the protein which the body requires. A diet of peas and beans contains a larger proportion of protein than is required. The same is true of most cereals. Nuts, with the exception of the pecan, are very rich in protein. Pine nuts and almonds contain protein in a larger percentage than does meat itself. A pound of peanuts or almonds contains as much protein as a pound and a half of the best steak. The sense of loss when these articles are discarded may be easily overcome by increasing the amount of butter or olive oil taken, and if anything more is needed, an ounce or two of almonds or other nuts may be eaten. The newly introduced soy bean is more than a substitute for meat. It is rich in lime and vitamins, which meat lacks. Its protein is "complete."

# Book Notices

## In the Shadow of Great Peril

"Young Mr. Wade comes into our midst abruptly, but with all the delightful poise of the most recent model of Young America," writes George Ade.

This eleven-year-old youngster—whom Irving Cobb calls a genius—has written a tale which will make the Tired Business Man sit up and gasp—and he'll chortle with delight over its refreshing artlessness. In fact, no reader will doze over "In the Shadow of Great Peril."

Adventure rides apace through the pages of Master Wade's first book. Romance crowds hard upon youthful daring. Friendships are cemented by perils shared, and appetite never flags.

His publishers present this story exactly as the author wrote it. Not a sentence has been "edited." Spelling, punctuation and capitalization are untouched. It is the *actual product of a genuine boy.*

"In the Shadow of Great Peril." By Horace Atkisson Wade. $1.25 net. Chicago: Reilly & Lee.

## A Son of Courage

The spirit of the woods is in this story. A pioneer settlement on the north shore of Lake Erie, in the early days of the development of the Canadian oil fields, spreads the canvas for an alluring picture. You sense the forest paths and the wide blue sky as you read.

You meet a true son of courage—as captivating a character as ever fiction made real—in these pages. And you meet rugged, shrewd, kindly people. They are human folk, minus the veneer of the city-bred. Their humor is the humor of out-of-doors. A mystery, with shivery little thrills, and a real love story of unusual appeal, combine to speed the narrative. In short, here's an entertaining, satisfying story.

"A Son of Courage." By Archie P. McKishnie. Net $1.75. Chicago: Reilly & Lee.

(*Continued on page 18*)

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**Your Opportunity**

Home Ecomomics and Dietetics have received added impetus since the World War because of the awakening of the medical profession to the fact that a woman trained along these lines is an indispensable part of the hospital personnel; also because of the fact that the laity have come to realize more than ever the importance of Home Economics training for every young woman in order that she may direct, and teach others to direct, intelligently and efficiently their own households and the larger households—the institutions.

With this purpose in mind, the Battle Creek Sanitarium School of Home Economics is offering two professional courses, *i. e.,* for Teachers and for Dietitians.

The Teachers' Course fits one for teaching Home Economics in public and other schools.

The Dietitians' Course of two years fits one for institutional work in hospitals, dormitories, hotels, clubs, schools, orphanages, cafeterias and lunch rooms in factories, Y. W. and Y. M. C. A.'s and office buildings—for the position of Laboratory Technician and Extension and Social Service work.

Graduates of both courses are filling high salaried, responsible positions in all parts of the country. The demand the past year for Dietitians and Teachers of Home Economics has been greater than could be met.

In addition to the high scholastic standard, students enjoy refined companionships, pleasant surroundings, and the many advantages of the Sanitarium with which the school is affiliated. For those who enjoy athletics there is boating, swimming, skating, tennis, and other sports.

Opportunities are offered students to defray a part of their expense. Tuition and living expenses are moderate. For illustrated prospectus, giving full outline of curricula, terms and entrance requirements, address:

REGISTRAR
**The Sanitarium School of Home Economics**
27 Administration Building
BATTLE CREEK - MICHIGAN

# Book Notices

(*Continued from page 17*)

## Natural Food and Care for Child and Mother

We are inclined to agree with Dr. Winfield Scott Hall who says that this is "an admirable book that will be of incalculable value to mothers." There is a bewildering amount of literature being written for mothers and a good deal of it is high-flown and slushy. Many writers forget that mothers have anything to do but to be mothers. It is an all-round helpful book that women welcome—the women who are eager to rear their children in the best way, and also to take their part in the affairs of the day as all women should. Mrs. Rummler calls this book of hers a "System," and that is what it really is. We cordially recommend this book to all young mothers. The Questionnaire Department of the book is admirable.

"Natural Food and Care for Child and Mother." By Susan Harding Rummler, Ph.B. Net $1.60. Chicago: Rand McNally & Company.

## The Duke of Chimney Butte

The "Duke" arrives at the Bad Lands on an old-fashioned bicycle, and the bicycle lasts about as long as a plug hat would last in that country. Later, things begin to happen; the Duke was something of a tenderfoot, but he soon demonstrated that he could ride and shoot in a way that commanded respectful admiration.

He was peculiar, too; had queer chivalric notions, and a keen sense of justice; just the kind of a man who would be in hot water most of the time in that lawless land. When romance came to him, it was as uncommon as the man himself, and it disturbed even his equanimity to find the girl he loved possessed with a desire to end his earthly existence.

"The Duke of Chimney Butte." By G. W. Ogden. Chicago: A. C. McClurg & Company.

A Cool Lunch
for a busy man on a hot day

# Grape-Nuts

A sustaining cereal food of appealing flavor, quickly digested and full of sound nourishment.

*"There's a Reason"*

# EDITOR'S QUESTION BOX

*12,298. Tomato and Cancer or Rheumatism.—S. A. B., California.*

Do tomatoes cause cancer or rheumatism?

*Ans.* By no means. Tomatoes are a most excellent vegetable-fruit. They are especially an excellent source of organic salts which are highly useful in rheumatism as a means of neutralizing acid wastes. The popular notion that tomatoes may be the cause of cancer has been shown to be utterly fallacious. The acid flavor of the tomato is due to citric acid. The tomato is best eaten raw. Fresh tomatoes are a valuable source of vitamines as well as of alkaline salts.

*12,299. Normal Blood Count.—C. H.R., Illinois.*

What is the normal blood count?

*Ans.* The average number of red blood cells per cubic millimeter for men is five millions; in women the number of red blood cells is four and one-half millions. A millimeter is one twenty-fifth of an inch. A drop of blood contains more than thirty times as much as a millimeter, or about 160 million red blood cells.

*12,300. Best Climate for One Who Has High Blood Pressure.—M. E. Ohio.*

What is the best climate for one who has high blood pressure?

*Ans.* The cold climate is better, provided one keeps warm, and there is no need of suffering from cold in a cold climate The breathing of the cold air is a very great advantage in cases of high blood pressure because it supplies the body with oxygen and helps to carry off poisons. A hot climate has a very depressing effect upon the heart, which is a great disadvantage to persons suffering from high blood pressure.

*12,301. Lemonade for a two-year old child.—E. M. B., Michigan.*

Do you approve of giving a two-year old child lemonade at the same meal that milk is given? Other children in the family seem to thrive on this diet in summer, but a visiting relative has raised the question in the baby's case.

*Ans.* There is no incompatibility between milk and lemonade or fruit acids in other forms. Fruit is a liquid food, however, and very bulky, and on this account it is questionable whether the taking of lemonade with milk would be advisable in the case of a child as young as two years. It would be better to give the lemonade at some other time than at meal time.

*12,302. Weak Heart and Exercise.—R. O. L., Indiana.*

If a person has a swelling of the limbs due to a weak heart, will a certain amount of exercise be beneficial, or is rest necessary?

*Ans.* In general, the patient should rest in bed until the swelling disappears but there are some simple exercises which may be taken in bed with profit. Among these are deep breathing, arm and leg flexing and extending the arms, the fingers, elbow, ankle, and knee joints, rolling the head from side to side, and turning over in bed.

*12,203. Proper place for Children's Naps.—E. E. S., Ohio.*

In very hot weather, should little children take their naps outdoors, or in the house?

*Ans.* Young children should not be exposed to excessive heat. The direct rays of the sun are often harmful to them. A quiet, cool place indoors would be better than a very hot place out-of-doors.

# LISTERINE

Listerine is a saturated solution of boracic acid and volatile antiseptic oils—complete formula stated on package—it may be diluted with water without precipitating its constituents—being non-poisonous and unirritating, it has a wide range of usefulness—

**As a wash and dressing for wounds;**
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Listerine has so many uses in the home that the family medicine cabinet is incomplete without a bottle.

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| 33x4 | 11.15 | 36x5 | 14.85 |
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The price of the Vaporizer with oil is $1.25.

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# Editor's Question Box

*(Continued from page 12)*

*12,304. Removal of Tonsils.—F. M. W., Florida.*

Do you recommend the removal of tonsils when they do not seem to be diseased except for an occasional slight inflammation? There are no symptoms of rheumatism.

*Ans.* The tonsils should be examined bacteriologically, and if harmful germs are present in crpyts or pockets in the tonsils, they should be removed.

*12,305. Proper Length of Time for Cooking Oatmeal—R. B. S., Colorado.*

You recommend that oatmeal should be cooked only six minutes, in order that some of the undigested starch of the grain may reach the colon. Should not oatmeal be more thoroughly cooked for children, and when the maximum amount of nourishment is desired?

*Ans.* No. Children are greatly benefitted by the use of oatmeal cooked in the manner directed. The time of cooking may be extended to ten minutes without injury. The amount of nourishment lost through the partial cooking of the starch is not appreciable.

*12,306. Diabetes.—M. M. A., Illinois.*

What percentage of diabetes cases are curable? When the tests show no sugar present in the urine, is it necessary to follow the strict diet?

*Ans.* Very few cases of fully developed diabetes are actually cured. In most cases the loss of sugar through the urine can be stopped, the patient made comfortable, and his life very greatly prolonged; but this can only be accomplished by continuous and scientific regulation of the diet. A strict diet must be followed after the sugar has disappeared, but the amount of starch and other carbohydrates should be increased to the point of tolerance; that is, as much should be eaten as possible without causing the appearance of sugar in the urine.

*(Continued on page 16)*

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28 Administration Building
BATTLE CREEK - MICHIGAN

## Editor's Question Box

(*Continued from page 14*)

*12,307. Botulism and Ptomaine Poisoning.—E. A. M., Canada.*

What is the difference between botulism and the well-known ptomaine poisoning? Is the botulism something new?

*Ans.* The poison produced in botulism is not a ptomaine but a toxin produced by a specific germ which gives rise to this disease. Ptomaines are produced by ordinary putrefaction processes. Botulism is not a new disease. It has doubtless existed from time immemorial, but its true character has become known only in recent years.

*12,308. The White of Egg.—G. L. O., Michigan.*

We read that the white of egg is not wholesome food. Should the white be discarded in custards, puddings, omelets, and other dishes where the whole egg is commonly used?

*Ans.* Cooked white of egg is digestible. Raw egg white is only slightly if at all digestible, and greatly encourages putrefaction in the colon.

*12,309. Low Protein Diet and High Blood Pressure.—F. A. W., Indiana.*

When a patient is on a low protein diet for blood pressure, is buttermilk or skimmed milk allowed?

*Ans.* Yes, if milk does not disagree with the patient by causing coating of the tongue, constipation and bad smelling stools.

*12,310. Sterilized Milk.—E. O. F., Canada.*

Is there any way to sterilize milk in the home without boiling, and if there is such a process, does it destroy the vitamins?

*Ans.* Milk may be sterilized by heating it to a temperature of about 140° and adding a teaspoonful of peroxide of hydrogen to each quart of milk. After adding the peroxide, the milk should be stirred for about fifteen minutes. It should then be set on ice. Unfortunately, sterilization by peroxide of hydrogen destroys the vitamins, as does boiling, and hence has no advantage over the simpler process.

*12,311. Brick Dust Sediment in the Urine.—M. K. Y., California.*

What causes a brick dust sediment in the urine? What does a white sediment in the urine indicate?

*Ans.* A brick dust sediment in the urine is due to a deposit of uric acid crystals. A white dust sediment may be due to various substances, the nature of which can only be determined by a chemical and microscopic examination by an expert.

*12,312. Leakage of the Heart.—E. E. H., Illinois.*

Can leakage of the heart be cured? Is an outdoor occupation such as farming better for a patient with this difficulty than office work?

*Ans.* No. Fortunately, diseased conditions of the heart which give rise to leakage of its valves are not the most serious form of heart disease. In most cases the heart acquires a compensation or tolerance which enables it to do its work in spite of the leak. So long as this compensation lasts, the individual often suffers little or no inconvenience.

An outdoor ocupation is in every way preferable for a person suffering from heart disease or almost any disease. Of course, very hard work and violent exercise of every sort should be avoided, but a little overwork now and then would be much less harmful than the inactivity and indoor confinement of a sedentary life.

*12,313. Proper Shoes for One to Wear.—N. C. C., Missouri.*

Does it make the feet tender to wear the so-called sneakers day in and day out? Are heelless slippers and rubber soles on shoes harmful?

*Ans.* Rubber coverings are harmful to the feet. Rubber soles are not objectionable if leather or felt insoles are worn.

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# Book Notices

## Hygiene and Sanitation—A Text-Book for Nurses

The last decade has seen a wonderful expansion of the function of the trained nurse and a great broadening of the scope of her usefulness.

No one at present denies the great utility of the nurse's work in the school, in the factory, in the social part of dispensary work, in the milk stations, in the preventive work undertaken by life insurance companies, and in many other public health activities a fundamental knowledge of the principles of hygiene and public health is necessary for intelligent work and usefulness.

This book is an attempt to give the nurse a knowledge of the elements of hygiene in its various branches. Disputed points and too detailed instructions on minor points have been avoided.

The new edition of this book has been brought carefully to date. A new chapter on Infectious Diseases has been added, the chapter on Personal Hygiene has been considerably amplified, the chapter on School Hygiene has been elaborated, and the text of the other parts of the book has been carefully revised.

"Hygiene and Sanitation for Nurses." By George M. Price, M. D. Philadelphia: Lea & Febiger.

## Sarah and Her Daughter

This is a story of New York's ghetto and deals with an orthodox Jewish family of immigrants. The author has a vivid pen and the characteristics and miseries (there seems to be no happiness) of the Mendel family are graphically told. From beginning to end, the book is a series of misfortunes that leave a most depressing effect upon the reader Probably this story is true to ghetto life, because critics who well know this type of existence speak in praise of the book. Even to the Gentile reader the story has its gripping episodes, and it should have a wide sale among Jewish people.

"Sarah and Her Daughter." By Bertha Pearl. $2.00. New York: Thomas Seltzer.

## A Straight Deal or The Ancient Grudge

Each chapter of this book is a delightful essay in itself. In the chapters, "Some Family Scraps," "On the Ragged Edge," we get an illuminating bird's-eye view of certain historical, national incidents of interest. The author draws true, and also some amusing comparisons between Rude Britannia and Crude Columbia. We are warned that "nations do not like each other," and are told why. Speaking of the Great War, Mr. Wister deprecates the boastfulness of American soldiers, and at the same time, admits that the provocation is great. He advises us to "resemble as little as possible our present Secretary of the Navy." Mr. Wister's delightful series of essays should be in every man's library.

"A Straight Deal or the Ancient Grudge." By Owen Wister. Price, $2.00. New York: The Macmillan Company.

## You Can, But Will You?

Dr. Marden has a large following of readers who eagerly await each new book from his pen. This one is a call to action, a constant incentive to the man of ambition to assert himself. Back of it all is the preachment that one's powers are God-given, and practically limitless, if used intelligently.

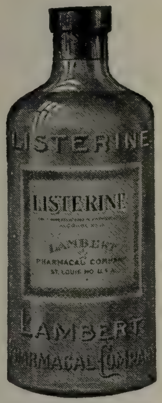
To quote: "Most of us are dwarfs of the men and women we might be, because we do not know our power. We have vast possibilities, and yet are doing the work of pigmies, because we never draw upon that inner force which would make us giants."

"You Can, But Will You?" By Orison Swett Marden. New York: Thomas Y. Crowell Company.

# LISTERINE

Listerine is a saturated solution of boracic acid and volatile antiseptic oils—complete formula stated on package—it may be diluted with water without precipitating its constituents—being non-poisonous and unirritating, it has a wide range of usefulness—

**As a wash and dressing for wounds;**
**As a gargle, spray, or douche;**
**As a mouth-wash-dentifrice;**
**As a deodorant and antiseptic lotion.**



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As a face lotion, after shaving, the application of Listerine allays irritation and promotes the healing of an abraded or otherwise injured surface of the skin.

In all cases of fevers, where the patient suffers so much from a parched condition of the mouth, a few teaspoonfuls of Listerine in a glass of water provides a refreshing and effective mouth-wash.

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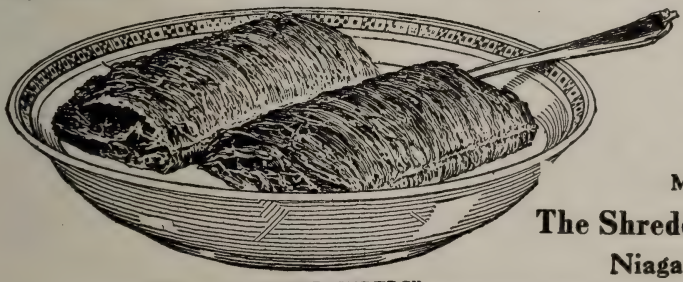

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# EDITOR'S QUESTION BOX

*12,314. A Safe Walking Gait.—C. F. R., Michigan.*

What do you consider a safe and sane walking gait for a woman in ordinary health? In walking five miles daily, is it better to walk half the distance with several hours' rest before taking another walk?

*Ans.* Two and one-half to three miles an hour. The distance walked must of course depend upon the strength. Great fatigue or discomfort following the walk should be regarded as indications of overdoing.

*12,315. Mosquitoes and Mosquito bites.—D. O. W., Wisconsin.*

How can mosquitoes be destroyed about the ordinary home, and what is the best remedy for mosquito bites?

*Ans.* Mosquitoes cannot breed without standing water. A very small amount of water standing in rejected fruit cans, old bottles, pails, barrels, boxes, hollow places, areas protected by bushes or a long thick growth of grass or weeds, hollow stumps or collections of water of any other sort, afford an opportunity for the breeding of mosquitoes and should be suppressed or covered with kerosene oil.

Menthol linement is an excellent application for mosquito bites. A better application is a towel wrung out of water as hot as can be tolerated by the skin without blistering. Carbolated vaseline may be applied after the hot application.

*12,316. Distilled Water.—M. E. T., Georgia.*

Why is distilled water considered more healthful than artesian water, or very hard water?

*Ans.* Lime and other mineral ingredients in water are in no way beneficial and lessen the value of the water for culinary purposes.

*12,317. Numbness in Hands, Arms and Legs.—F. E. R., Montana.*

When lying down or sitting for any length of time, the hands, arms or legs become numb. Why is this, and what is the remedy?

*Ans.* The fault probably lies in the vasomotor system. The circulation of the nerves is disturbed by pressure. Massage, hot and cold bathing, gentle exercise, and especially attention to the hygiene of the colon, are measures most likely to afford relief.

*12,318. Inactive Liver.—R. M. Y., Texas.*

How can one tell if his liver is inactive or sluggish? Does this condition give a yellowish cast to the complexion?

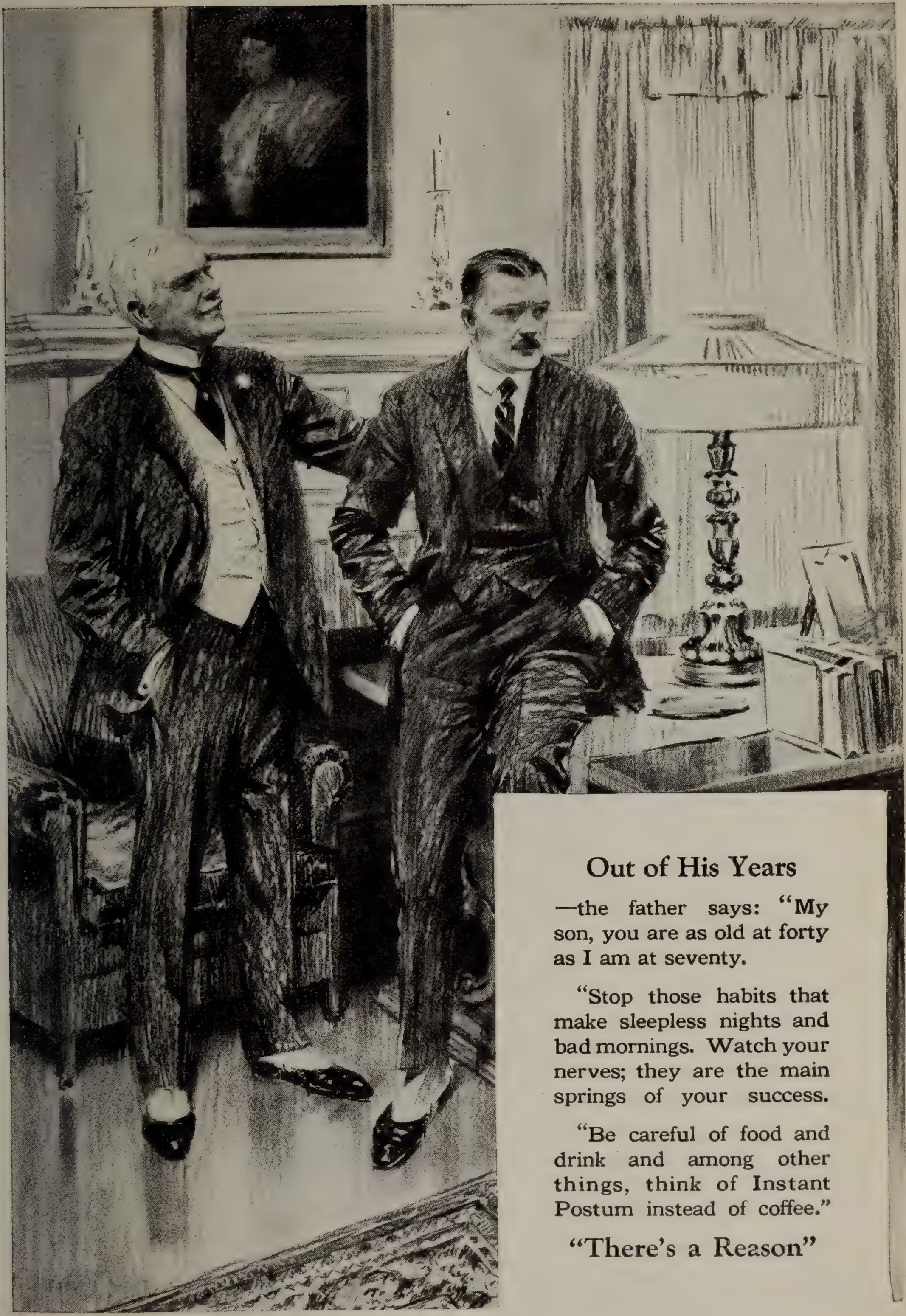
*Ans.* The condition usually ascribed to inactivity of the liver, such as coated tongue, so-called "biliousness," dingy complexion, etc., are not really due to torpor or inactivity of the liver but rather indicate that the liver is overworked. The liver is always doing its best to keep its possessor in good health. When it seems to fail in the perfect performance of its function, it is because more work is thrust upon it than a liver ought to be asked to do. A greenish-yellowish complexion is due to the absorption of bile through the obstruction of some of the bile ducts. When this condition is present, the urine is usually darker in color than normally.

*12,319. Treatment for Split Hair.—A. K., New York.*

What causes the hair to split at the ends, and what should one do for it? Does singeing help?

*Ans.* The hair is badly nourished and does not receive from the scalp a sufficient

*(Continued on page 14)*



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is worth more than a pound of cure and especially in case of headaches. You often hear some one say—perhaps *you* say it—"If I could only get rid of headaches, I should be thankful. But there doesn't seem to be anything that will cure them."

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## Editor's Question Box

(*Continued from page 12*)

amount of oil. Possibly the secretion of the thyroid gland may be diminished. Massage of the scalp is a good remedy. A small amount of fine vaseline may be rubbed into the hair. Exposure of the scalp to the sun and sun baths or electric light baths to the whole skin are beneficial measures.

*12,320. Fasting.—N. R. S., California.* Is fasting helpful?

*Ans.* There are certain conditions in which fasting is necessary and to the highest degree beneficial, as for example in cases of gastric or duodenal ulcer, especially if accompanied by hemorrhage, after operations upon the stomach and sometimes in fever cases. The idea that fasting is highly beneficial as a means of freeing the body of poisons has little scientific foundation. Experiments and observations made upon animals and upon human beings subjected to prolonged fasts have afforded abundant evidence of the terrible consequences to the various bodily organs, as a result of the determined effort of the body to maintain animal heat and the various bodily activities in the absence of a proper food supply.

*12,321. Orange Pulp.—E. F. B., Indiana.*

Should children eat the pulp of oranges?

*Ans.* The pulp of the orange, if well chewed, may be swallowed without injury by any healthy person. One or two oranges eaten at bed time is an excellent means of encouraging bowel action. The acid of the orange stimulates peristalsis. The indigestible fibre of the pulp helps to furnish the bulk necessary for normal bowel action.

*12,322. Tomato Poisoning.—L. M. P., New York.*

In what way are tomatoes poisonous?

*Ans.* That an acute eruption on the hands may be caused by poisoning from handling tomato vines, especially when wet with dew or rain, has recently been pointed out by observing physicians. The poison-

(*Continued on page 16*)

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# Editor's Question Box

(*Continued from page 14*)

ous properties are confined to the leaves. Tomatoes are a most wholesome vegetable-fruit. They are especially an excellent source of organic salts, which are highly useful in rheumatism as a means of neutralizing acid wastes. The popular notion that tomatoes may be a cause of cancer has been shown to be utterly fallacious. The acid flavor of the tomato is due to citric acid. The tomato is best eaten raw. Fresh tomatoes are a valuable source of vitamins as well as of alkaline salts.

*12,323. Beet Sugar.—H. H. B., Michigan.*

Is beet sugar more wholesome than cane sugar?

*Ans.* Beet sugar and cane sugar are the same. Cane sugar is found not only in the sugar cane, but in the sap of the maple tree, in the sugar beet, and in fact in most vegetables and some fruits.

*12,324. Coffee Poisons.—G. L. V., Canada.*

What is it in coffee that causes injury?

*Ans.* Caffein, which is a narcotic poison, and tannic acid, which interferes with the action of the gastric juice. Roasted coffee contains pyramidine, a smoke poison produced by the roasting process. Besides these poisons, the coffee berry contains others which produce highly injurious effects, such as arteriosclerosis or hardening of the arteries, with high blood pressure, Bright's disease and apoplexy.

*12,325. The Clay Poultice.—C. D. A., Ohio.*

How should one prepare a clay poultice for the relief of pain?

*Ans.* Modeler's clay mixed with equal parts of water and glycerine to the consistency of very thick cream, and applied hot to the painful parts, often affords relief. This is a most excellent preparation, far better than bread and milk poultices or any similar preparation. Under the name of "Antiphlogistin," a clay paste is sold in drug

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stores. Our experience is that this preparation is no better than ordinary clay prepared as suggested.

*12,326. Heat Rash.—L. M. Y., New Jersey.*

What is the cause of a rash that comes out on the arms when the person becomes heated?

*Ans.* There is doubtless a hypersensitive condition of the skin, very possibly the result of an acrid state of the perspiration. This condition is generally the result of a chronic toxemia arising from the absorption of putrefactive products from the intestine. Relief can generally be obtained by cleansing the parts daily with distilled or soft water, by bathing with alcohol, and the free use of borated talcum powder.

*13,227. Whooping Cough.—E. S. H., Connecticut.*

What is the cause of whooping cough?

*Ans.* Whooping cough is due to a specific germ. The duration of the disease is somewhat indefinite. It usually lasts from four to six weeks. It may become chronic and last much longer. It is very contagious. A child suffering from whooping cough should drink large quantities of water daily and should be in the open air as much as possible.

*12,328. Diet in Anemia.—R. F. H., Montana.*

What is the proper diet in anemia? Is not meat necessary?

*Ans.* An anemic person should eat a great deal of fresh vegetables, especially green stuff like lettuce and cucumbers or those things containing a great deal of iron. Meat is the very last thing such a person should eat. This condition in many cases is due to poisoning by colon germs, which are derived from meat. According to Sherman and other authorities, the iron of vegetables is much more easily assimilated than the iron of blood and meat.

# Book Notices

## The Tidal Wave

The longer story which gives this volume of six stories its title concerns an artist whose fascinating personality overcomes shyness, and in a measure the modesty of his pretty fishing village model, and the resultant jealousy of her sturdy fisherman lover. A story of power and of deep sentiment.

Ethel Dell is a forceful writer, and readers will find this volume of short stories decidedly worth while.

"The Tidal Wave." By Ethel M. Dell. Net $1.75. New York: G. P. Putnam's Sons.

## The Slayer of Souls

No author of adventurous love tales writes with a surer hand than Mr. Chambers. Here in one breathless story is caught up the black magic of ancient China, together with the mysterious workings of a vast secret society whose tenacles spread westward to the United States. The part played by Tressa Norne, for years a captive temple girl in China, in undoing the plots of this band is a story that even Mr. Chambers would have trouble in matching in his long list of exciting tales.

"The Slayer of Souls." By Robert W. Chambers. New York: George H. Doran Company.

## The Argonauts of Faith

This is the story of the Pilgrims told for younger readers. Simple and direct and in close conformity with the historical records, this narrative still remains one of the greatest romantic tales of man's adventurous spirit. No legend of Greek or Roman literature surpasses it in beauty, in daring, and in faith.

Viscount Bryce says: "It is by their faith and courage that the men who sailed in the Mayflower won their undying fame. The memory of what they were and what they did is today one of the strongest links that bind America and England together. They set a noble example for the youth of England as well as for the youth of America to remember and to imitate. It is an example in which the generation now called upon, as it reaches manhood, to make good the losses of war may find stimulus and cheer. A time has now come again, as it came three centuries ago, in which faith and courage and constancy, and the hopefulness which courage gives, must have their perfect work."

"The Argonauts of Faith." The Adventures of the "Mayflower" Pilgrims. By Basil Mathews. New York: George H. Doran Company.

## Applied Anatomy and Kinesiology

We quote two paragraphs from the author's preface to this book, and the quotation briefly explains the subject of the book. It is decidedly technical and will interest only physicians, nurses, teachers of physical training, and those whose work and interest compel them to a knowledge of the subject. It is undoubtedly the most complete and scientific of anything that has been written on the mechanism of muscular movement.

"Kinesiology is the science of bodily movement. It includes a study of the principal types of muscular exercise, with inquiry as to how they are performed, how they react on the body, and their relation to the problems of bodily development, bodily efficiency, and the prevention and cure of certain defects and deformities.

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"Applied Anatomy and Kinesiology." By Wilbur Pardon Bowen, M. S. Price, $3.50. Philadelphia: Lea & Febiger.

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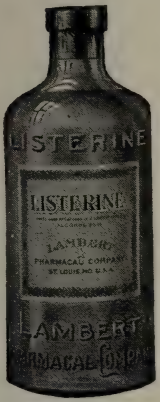

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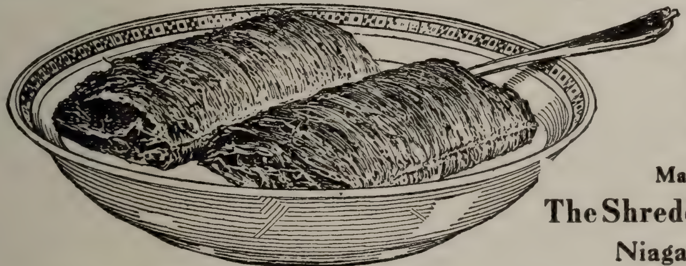

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# EDITOR'S QUESTION BOX

*12,329. Continued Use of Bran.—D. C. R., Michigan.*

Can one use sterilized bran indefinitely without any harm?

*Ans.* Sterilized or cooked bran may be used for an indefinite time without injury; in fact, most people could with great benefit add one or two tablespoonfuls of bran to each daily meal. Bran supplies elements which are needed to complete the ordinary bill-of-fare, and should be found on every table at every meal.

*12,330. Botulism and Lathyrism.—M. M. J., Indiana.*

Are the poison conditions known as botulism and lathyrism from the same source, or are they different disorders?

*Ans.* No. Botulism is a disease due to germs developing in decomposing food. It is most likely to occur from the use of canned goods which have spoiled because not processed at a sufficiently high temperature, especially fish, beans or ripe olives.

Lathyrism is a disease which results from eating the seeds of the chick-pea vetch. This disease is sometimes called lupinosis.

*12,331. Typhoid Vaccination—Typhoid and Smallpox.,—Y. O. N., Ohio.*

Is it advisable to have vaccination against typhoid as general as the ordinary vaccination against small-pox?

*Ans.* Vaccination against typhoid no doubt saved the lives of hundreds, perhaps thousands of soldiers in the late war; but the danger from the disease in civilized life is now hardly great enough, since public water supplies are so greatly improved, to justify resort to general vaccination against typhoid as a preventive measure.

2. Is the danger from typhoid not more widespread than that from smallpox?

*Ans.* Yes; but the danger from the disease is exceedingly small in cities which have a well-guarded water supply.

*12,332. Car-Sickness.—E. D. C., Michigan.*

Is there any known remedy for car-sickness? It is impossible for the writer to ride in trains or trolley cars without extreme nausea.

*Ans.* The horizontal position is the best preventative against car-sickness. A tendency to this difficulty is increased by constipation and other conditions which produce the condition commonly known as "biliousness."

*12,333. Raynaud's Disease.—L. E. Y., New York.*

What is the nature of Raynaud's disease? Is it always fatal? Is it common in America?

*Ans.* Raynaud's disease is due to toxins in the blood which cause contraction of the arteries and asphyxiation of parts of the body in which the circulation is feeblest, as in the fingers, toes, tip of the nose and chin. It is sometimes accompanied by degenerative changes in the arteries. The disease is rather rare at the present time, but seems to be becoming more common. It is not fatal if proper measures of treatment are applied.

*12,334. Stomach Worms in Children.—C. C. B., New Jersey.*

What would cause stomach worms in a child ten months old? What is the remedy?

*Ans.* Parasitic worms are always the result of infection with the eggs or embryos

(*Continued on page 14*)

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## Editor's Question Box

(*Continued from page 12*)

of worms. The remedy needed depends upon the nature of the worm. A physician should be consulted. He will be able to ascertain the nature of the parasite and to apply the proper remedy.

12,335. *Roaring Sound in the Ears.— R. N. G., California.*

What causes a roaring sound in the ears, especially noticeable after retiring?

*Ans.* The most common cause of roaring in the ears is a diseased condition of the eustachian tubes or of the middle ear. A skilled aurist should be consulted.

12,335. *Drowsiness.— G. L. B., Missouri.*

It is impossible for me to keep awake when reading or listening to a lecture. I follow a biologic diet and am not constipated. What can I do for this increasing drowsiness when I am not engaged in active work?

*Ans.* First of all, be sure to obtain a sufficient amount of sleep at night, then take care to keep the colon empty. The bowels should move three times a day. An enema should be taken at night, if necessary, to secure complete evacuation of the colon. A cold bath daily and an abundance of out-of-door exercise will help to establish normal conditions.

12,337. *The Cause of Rheumatism.— O. E. F., Canada.*

Does constipation cause rheumatism, or is it usually due to diseased teeth or tonsils?

*Ans.* Constipation, through producing colitis and autointoxication, may easily become an active cause of rheumatism. There are probably more cases of rheumatism due to colitis and constipation than to any other cause.

12,338. *Chronic Diarrhea.—C. H. R., Indiana.*

What is the cure for chronic diarrhea? There seem to be no symptoms of disorder except the frequent and watery stools.

*Ans.* The intestinal flora must be

(*Continued on page 16*)

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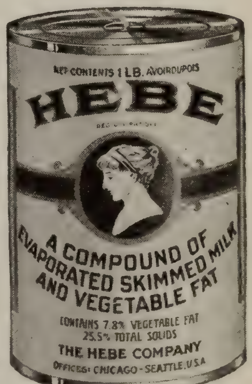
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Home Economics and Dietetics have received added impetus since the World War because of the awakening of the medical profession to the fact that a woman trained along these lines is an indispensable part of the hospital personnel; also because of the fact that the laity has come to realize more than ever the importance of Home Economics training for every young woman in order that she may be able to direct, and teach others to direct intelligently and efficiently her own household, and the larger households—the institutions.

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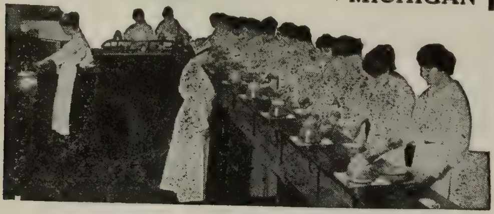

# Editor's Question Box

(*Continued from page 14*)

changed. This may be accomplished by the use of the fruit regimen, including three ounces of milk sugar or dextrine three times a day.

*12,339. Normal Blood Count.—L. M. S., Montana.*

What is the normal blood count? If the blood count is low, will the blood pressure be low?

*Ans.* For men, 5,000,000 red blood corpuscles for each cubic millimeter of blood (a millimeter is one twenty-fifth of an inch); for women, 4,500,0000. When the blood count is low, the blood pressure is likely to be low also, especially in young or middle-aged persons. But this is not necessarily the case.

*12,340. Fruit Juices for the Diabetic.—F. A. M., Illinois.*

May a diabetic patient take grape, loganberry and orange juice daily, and how much?

*Ans.* Fruit juices contain a considerable amount of sugar. This is especially true of grape juice and loganberry juice, which are artificially sweetened with cane sugar and on this account are not suitable food for diabetics.

*12,341. Fruits in Hyperacidity.—S. E. W., New York.*

What fruits are allowed in a marked case of hyperacidity?

*Ans.* Purées of bananas, baked sweet apples, baked or stewed pears, and avocados are excellent fruits for persons suffering from hyperacidity.

*12,342. Decay of the First Teeth.—B. C. L., Iowa.*

Will the use of sweets, such as honey, and sugar on cereals, etc., cause decay of the first teeth?

*Ans.* The free use of sugar encourages decay of the teeth by depriving the body of the necessary food lime which is essential for the preservation of the teeth.

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*12,343. Starch—Fruits and Milk at the Same Meal.—E. H. T., Illinois.*

Is it advisable to eat more than one kind of starch at a meal?

*Ans.* There is no objection to eating several kinds of starch at the same meal.

2. May one eat all kinds of fruit when taking milk at the same meal?

*Ans.* There is no objection to taking fruits of any sort at the same meal with milk; but one should not eat many kinds of fruit at the same meal.

*12,344. Grape-Cure.—A. S. D., Florida.*

Is the grape-cure that is so popular in Switzerland ever given in this country?

*Ans.* The grape-cure has been used in this country, but is now seldom employed, however, for the reason that better methods have been devised, particularly that known as the fruit regimen.

*12,345. To Soften Water for Table Use.—I. D. G., Georgia.*

How may water be safely softened in the home for table use?

*Ans.* The only way to render hard water perfectly soft is to distill it. Most of the lime may be precipitated by adding lime and salsoda to the water in proper proportions; but to do this requires an exact knowledge of the amount of lime contained in the water to be softened.

*12,346. The Sunflower.—M. J. S., Michigan.*

Is the sunflower a wholesome food? If so, in what form is it eaten?

*Ans.* Sunflower seed, and especially sunflower oil, is entirely wholesome.

*12,347. Vertigo.—V. C. C., Idaho.*

What causes vertigo when one lies down, and especially in turning the body or head from side to side?

*Ans.* The symptom described is sometimes due to disease of the middle ear. A thoroughly competent physician should be given an opportunity to look into the case.

# Book Notices

## What Bird Is That?

Here is a new kind of bird book. It not only shows the color and chief markings of each bird but also shows whether a bird is large or small. Moreover, by means of group pictures, it shows all the birds arranged according to season. With these two features to aid one, the identification of the various birds is easy, even for the beginner.

This book, by the great authority, Frank M. Chapman, is a complete guide. Every land bird east of the Rocky Mountains (301 species in all) is pictured. To accompany these pictures Dr. Chapman has written text describing the distinguishing marks, range, nest, eggs and song of each bird, and the localities where and seasons when it may be found. Every person who has ever wanted to know the birds should have this book. It is the simplest and most authoritative of bird books for the amateur.

"What Bird is That?" By Frank M. Chapman, Curator of Birds in the American Museum of Natural History, Author of "Bird Life," "Our Winter Birds," "Handbook of Birds," etc. New York: D. Appleton and Company.

## The Widening Circle

With a touch of marvellous delicacy and lightness the Marchioness Townshend reveals to us the impalpable beauty of the heart and mind of a girl gradually maturing towards womanhood. From the very first one feels that Elizabeth Sutherland, the dreamy, highly imaginative and keenly sensitive child, is destined for high things. Her father is a promoter whose varying fortunes lead him from London's costliest homes to her dingiest quarters. In the one Elizabeth and her sister play their enchanting Arabian Nights' games, in the other they remain waiting and expectant but unaffected. With the finest influences of her environment Elizabeth is always at one—from its drab, vulgar and ostentatious side she stands serenely aloof. So it is that in the convent she holds the saintly Sister Eleanora in deepest veneration, and in school she chooses Diana Stranmore as her friend. Elizabeth's intuition is her only guide, but it is a guide of unerring sureness. It is this guide that reveals to her the knowledge of love as the organ plays solemnly in the quiet and peace of the chapel. In this holy place Elizabeth realizes her destiny, and in unquestioning faith she awaits her lover. When he comes—this Prince in disguise—this man of her dreams—she receives him as one whom she had always known would come. But it is only after apparently insurmountable obstacles have been overcome that the lovers achieve the highest desire of their hearts.

"The Widening Circle." By The Marchioness Townshend. Net $2.00. New York: D. Appleton and Company.

## Miss Lulu Bett

Zona Gale's "Miss Lulu Bett" depicts Middle Western life in the same striking manner in which Edith Wharton has written of New England, John Fox of the Kentucky Mountains, George W. Cable of the old South and Booth Tarkington of his section of the country. In a small Western town with her brother-in-law and her married sister lives Miss Lulu Bett, never "strong enough" to take a job, yet able to do all the housework and serve as the family drudge. Into her cheerless life comes marriage. Apparently an escape from these drab surroundings, it develops into her great tragedy until, finally, through patient, enduring heroism, comes her release. Written in an intensely American manner by a thoroughly American author, a fine spirit marches through interesting, knowingly intimate pages to a triumphant close.

"Miss Lulu Bett." By Zone Gale. Net $1.75. New York: D. Appleton and Company.

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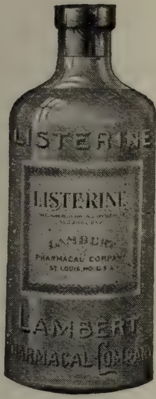
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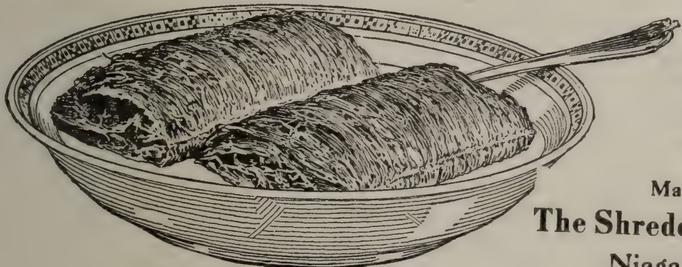

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# EDITOR'S QUESTION BOX

*12,348. Buttermilk Cure for Obesity.—H. I. P., North Dakota.*

Do you recommend the buttermilk cure for obesity when one has a very high blood pressure? What diet would you advise in a case of this kind?

*Ans.* The weight may be successfully reduced by a diet of three or four pints of buttermilk per day. However, the buttermilk diet is not the most satisfactory method of reducing weight.

*12,349. Corn Bread.—E. K. M., Nebraska.*

Is corn cake—"Johnnie cake"— a wholesome breakfast bread? Is it laxative?

*Ans.* Yes. Corn bread is entirely wholesome. It may be slightly laxative.

*12,350. How to Gain Weight.—L. M. S., Ohio.*

What diet should one follow to gain flesh?

*Ans.* Avoid meats, eat an abundance of fruits, rice and other cereals, fresh vegetables, ripe olives or olive oil, and take care that the bowels move two or three times a day. Nuts, sweet butter, cream, rice and other cereals, potatoes, malt sugar, malted nuts, vegetable oils, are excellent fattening foods. Drink an abundance of pure water between meals, morning and night. Live in the open air. Sleep outdoors. Take a cold rub or "salt glow" every morning.

When it is desirable to make a decided gain in weight, there is no better means than the milk regimen. Five or six quarts must be taken daily to insure an actual gain. Four quarts are needed to maintain the weight; more must be taken to insure a gain.

*12,351. Effect of Vitamines on Appetite.—M. G. H., Indiana.*

Have vitamines any connection with the appetite?

*Ans.* The feeding of vitamine-containing products almost always results in an improved appetite, if one may judge this by the resulting ingestion of increased amounts of the same ration which was refused on the vitamine-free regimen. Precisely what the decisive relationships here are—whether improved appetite induced by the vitamine leads to better food intake and hence better nutrition or whether nutrition improved by the potent food factor results in better appetite—can scarcely be decided at the present time.

*12,352. Cold Baths.—R. F. N., New York.*

Should cold baths be given to a young child?

*Ans.* Babies should not be given very cold baths. Water at 90° F. is cold enough for a young baby. The temperature of an infant's bath should at first be about 100° F., since to its sensitive, velvety skin even this temperature will seem cool; it should, however, be lowered five or ten degrees at its conclusion; and the general temperature should be gradually lowered from week to week until, when the child is six months old, water of 90° F. in winter and 85° F. in summer may be employed. With most children under four years it is well to begin the bath at about the temperature of the body if a tub is used, and at its close cool the water until the temperature is 80° or 85° F., or end the bath with a very short but not forcible spray of cool water.

*(Continued on page 14)*

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sounds a lot more cheery when it follows refreshing sleep, which brings brighter looks and better health.

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## Editor's Question Box

*(Continued from page 12)*

Children under seven do not well bear the application of very cold water. A temperature ranging between 70° and 80° F. will produce sufficiently strong impressions to develop a good reaction. An older child may enjoy a bath at lower temperature.

*12,353. The Cause of Colic.—G. S. C., Montana.*

Why should a baby two months old have colicky pains for an hour every day?

*Ans.* Probably there is something wrong with the mother's dietary. There may be some hereditary weakness of the stomach, and very likely the bowels are constipated. Children often have colic from over-feeding or taking nourishment too rapidly. A teaspoonful of mineral oil emulsion twice a day will relieve the constipation. A warm enema may be given for temporary relief. A hot bag over the abdomen will be found useful.

*12,354. Acids and Starches.—N. N. B., Michigan.*

May acids and starches be taken at the same meal?

*Ans.* Many people labor under the impression that acid fruits should not be eaten in connection with starchy foodstuffs. It is true that in cases of extreme hyperacidity fruit acids sometimes increase the amount of acid formed, and in such cases the great excess of acid in the stomach may interfere with the digestion of starch in the stomach. In such cases, however, it is only necessary to take care to take starchy foods in the form of puree and to swallow with little or no mastication, adding at each meal one or two dessert spoonfuls of olive oil. By this means an excessive formation of gastric acid may be checked.

*12,355. Spinal Curvature and Viscereal Disease.—E. E. C., Ohio.*

What harm results from spinal curvature?

*(Continued on page 16)*

# THE NEW COOKERY

By

**Lenna Frances Cooper, B. S.**

Columbia University; Dean of the Battle Creek School of Home Economics

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"Many new recipes have been added and all of the old ones carefully checked and tested, but the most important part of this revision has been the addition of a statement of the number of calories in each recipe—a feature found in no other general cook book—and a chapter on Food Values.

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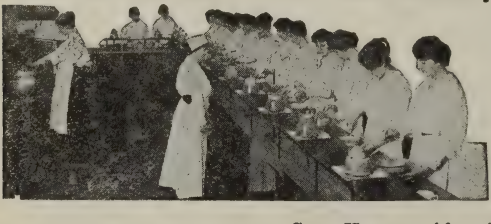


## Editor's Question Box

*(Continued from page 14)*

*Ans.* Curvature of the spine is a matter of importance because of the direct relation between external deformities of this sort and internal displacements of the viscera, such as prolapsed stomach, movable kidney and prolapsed liver and bowels. It is strange that, among civilized people, so little attention is given to the development of a good physique and erect carriage of the body. Among many half-civilized tribes, as the Arabs, for example, great attention is given to this matter. Children are taught from earliest infancy to walk, sit, and stand erect, and as the result, spinal curvature is practically unknown among the children of the desert.

*12,356. Gas Heating.—A. F. G., Illinois.* Is gas heating of rooms healthful?

*Ans.* A living room should never be heated with gas unless care is taken to thoroughly remove the products of combustion, so that none of them are mixed with the air of the room. In any room where gas or oil stoves are burning, there must be an open window. Open the window at the top, and also insert a window board under the lower sash, so air can enter the room between the lower and upper sashes.

*12,357. Indications for Sun Bath.—J. L. O., Wisconsin.*

For what ailments should the sun bath be used?

*Ans.* The sun bath is useful in all cases of malnutrition, anemia, inactivity of the skin, chronic dyspepsia, most cases of neurasthenia, indigestion, chlorosis, rheumatism, diabetes, and obesity. The only class of cases in which the bath is positively contraindicated is that in which the patient has recently suffered from heat stroke, and is especially susceptible to the action of the direct rays of the sun; but such cases are rare.

*12,358. Drowsiness.—W. E. Q., Indiana.* How may one relieve excessive drowsiness during the day?

*Ans.* A person who cannot sleep at night is often afflicted with an almost irresistible drowsiness during the day, especially after meals. Inability to keep awake in church or at a lecture is not uncommon. This difficulty is especially common in visceral neurasthenics, who often suffer from drowsiness when sitting or standing, but become wide awake on assuming the horizontal position. These persons suffer from lack of vasomotor regulation, and so are at the mercy of gravitation—when upright, the blood runs into the dilated abdominal vessels; when horizontal, the blood runs back to the head, so that the brain is alternately drained of blood and overcharged.

For temporary relief, bathing the face and neck with very hot or cold water, or with hot and cold water in alternation, are most efficient measures. Drinking half a glassful of hot water and lying upon the face over a pillow for a few minutes, avoiding sleep, are simple measures which often afford prompt, if temporary, relief.

*12,359. Prickling Sensations.—M. C. F., Michigan.*

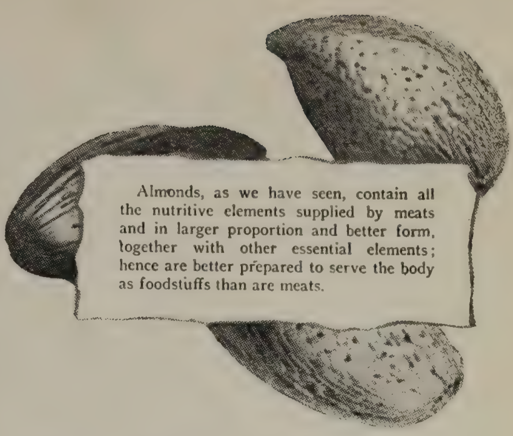
What is the cause of prickling sensations?

*Ans.* Hot flashes, cold sensations, prickling, smarting, "electric thrills" and a great variety of other perversions of sensations are experienced by certain classes of neurasthenics. While all these symptoms are sometimes experienced by those suffering from organic nervous diseases, their occurrence in neurasthenia has no other significance than a disturbed circulation of the nerve trunks.

*12,360. Foul Breath.—K. D. A., Ohio.*

What is the cause of a foul breath?

*Ans.* There are many minor causes, such as decaying teeth, chronic nasal catarrh, and diseased tonsils, but the principal cause is constipation. The poisons absorbed from the colon are discharged through the lungs, giving a fecal odor to the breath. The remedy is to adopt an antitoxic diet and to train the bowels to move three times a day.


Almonds, as we have seen, contain all the nutritive elements supplied by meats and in larger proportion and better form, together with other essential elements; hence are better prepared to serve the body as foodstuffs than are meats.

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They notice with bewilderment the flight of the natives, and then in a short hour they are plunged into the cataclysm of the advance of the Huns through Belgium. With amazement and terror they witness the execution of the mayor of the village. War surrounds them and engulfs them, literally before the first numbness of their bewilderment has died away.

How they act in their astounding situation, how the war affects their characters, their reflex and conscious actions under the strain, their ultimate fate, is here told in a way that makes this book unique and perhaps one of the biggest human dramas of the war.

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"Effective House Organs." By Robert E. Ramsay. Net $3.50, New York: Appleton and Company.

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To the sprite-like American girl, with moon-lit hair and eyes of jade, who has crossed the sea with the courage of high adventure, the Green God symbolizes the paradox of the Orient. Seen through the inexperienced eyes of unspoiled girlhood,

*(Continued on page 20)*

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ILLUSTRATED

## The National Agricultural Magazine

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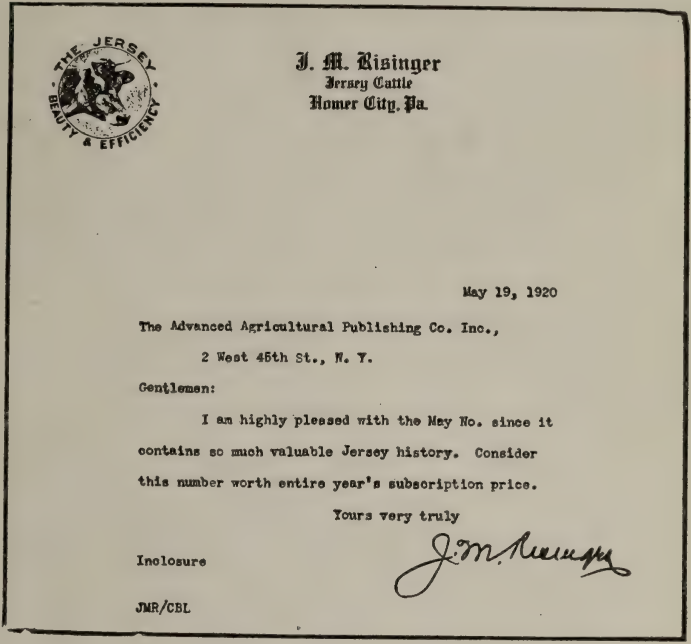

J. M. Risinger
Jersey Cattle
Homer City, Pa.

May 19, 1920

The Advanced Agricultural Publishing Co. Inc.,
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Gentlemen:

I am highly pleased with the May No. since it contains so much valuable Jersey history. Consider this number worth entire year's subscription price.

Yours very truly

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Very truly yours,

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## Book Notices

(*Continued from page 18*)

the shifting, opalescent panorama of the tropic islands begins like the vision of an enchanted dream, a wonderland of limitless and Heaven-high air-castles. But while she reaches up to seize the stars, she heedlessly defies the little Green God,—and narrowly escapes reaping the whirlwind.

"The Green God's Pavilion." By Mabel Wood Martin. New York: Frederick A. Stokes Company.

### War Neuroses

The account of the neuroses of war set forth in this book was written primarily for the instruction of the medical profession in America. Dr. MacCurdy came to this country in 1917 to inquire into the nature of the problems which were about to confront the neurologists and psychiatrists of America through the participation of that country in the war. The experience he gained was originally recorded in the "Psychiatric Bulletin" of the New York State Hospitals in July, 1917, and the Cambridge University Press are greatly indebted to the editors of this journal for their permission to make Dr. MacCurdy's work accessible to the public in another form.

The book describes the experience of one with a long record of skillful investigation of the psycho-neuroses of civil life when brought into contact in British hospitals with the special forms of neurosis which are produced by the shocks and strains of warfare. The cases on which the book is based are not startling rarities especially selected to show features of scientific interest, but are characteristic, straightforward cases such as may be met with by the score in any hospital especially devoted to functional nervous disorders. The merit of the book lies, not in the nature of its material, but in the skill with which this material has been treated and the clearness with which the essential facts have been set down and utilized to illustrate the special problems presented by the neuroses of war.

"War Neuroses." By John T. MacCurdy. Cambridge: University Press.

### Success Fundamentals

Dr. Marden is a lay-preacher on success. Whether judged by the quality of his discourse or the size of his audiences, his influence is of commanding importance. In this new utterance he goes to the bottom of things—as his title indicates. He discusses the underlying foundations of success, beginning first of all with "Health." He says very justly:

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"Success Fundamentals." By Orison Swett Marden. New York: Thomas Y. Crowell Company.

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## STATEMENT OF THE OWNERSHIP AND MANAGEMENT OF GOOD HEALTH MAGAZINE, published monthly at Battle Creek, Michigan.

Editor, J. H. Kellogg, M. D.; Business Manager, M. Kent, M. D.; Publisher, Good Health Publishing Co.; all of Battle Creek, Mich.

The Good Health Publishing Company is not a stock corporation, but is incorporated under the provisions of Act 20 of the Public Acts of 1855 of the State of Michigan—an Act for the Incorporation of Charitable Societies and acts lawfully amendatory thereto. The board of trustees are: J. H. Kellogg, Chairman; C. D. Rhodes, Treasurer and Secretary; Jas. T. Case; W. F. Martin, G. C. Tenney.

**M. KENT, M. D., Business Manager**

Sworn to and subscribed before me this last day of Sept., 1920. Clinton D. Rhodes, Notary Public, Calhoun County, Mich. My commission expires July 29, 1924.

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# EDITOR'S QUESTION BOX

*12,361. Soreness in the Side.—T. R. S., California.*

What is the cause of soreness in the right side of the body near the stomach?

*Ans.* The symptom may be due to any of several things. Pain near the stomach under the right rib may be due to ulcer of the stomach, ulcer of the duodenum, disease of the pancreas, disease of the gall-bladder, gallstones, or other less common affections.

It is entirely possible that the soreness may be due to a diseased kidney; or the appendix or the colon may be diseased. There are many other possibilities. You should be examined by a thoroughly competent surgeon. An X-ray examination after a bismuth meal would doubtless throw great light on your case.

*12,362. Bright's Disease.—J. S., Iowa.*

Can anything be done for a person who has chronic Bright's disease?

*Ans.* Much may be done. The kidney cannot be restored to full soundness, but it may be conserved—

1. By avoiding all causes of kidney irritation or overwork,
2. By adopting a biologic diet,
3. By copious water drinking,
4. By an out-of-door life and regular habits,
5. By training the bowels to move three times a day.

By the use of these simple means one may prevent the premature failure of the kidneys, and if evidence of disease appears, may hold it at bay for many years. By lightening the work of the kidney in every possible way, its activity may be prolonged for a long time after it would have failed without the aid of these rational measures.

*12,363. Fish.—J. S. F., Texas.*

Is fish a wholesome food when one cannot eat meat?

*Ans.* The popular idea that fish are more easily digested and more wholesome than red meats is entirely an error.

According to Prof. J. Roger, fish are more liable to disease than other animals.

Rogers gives a long list of poisonous fish.

Briger, as well as others who have made a careful study of this subject, have isolated numerous ptomaines which are found in the flesh of fish.

*12,364. L. A. D., Diet for Teething Child.—R. R. T., Canada.*

What is a proper diet for a teething child?

*Ans.* If teething begins while the baby is still feeding from the breast, no other food than mother's milk is required. At ten months the normal child has six teeth.

It is highly important that the food should at all times contain an abundance of lime.

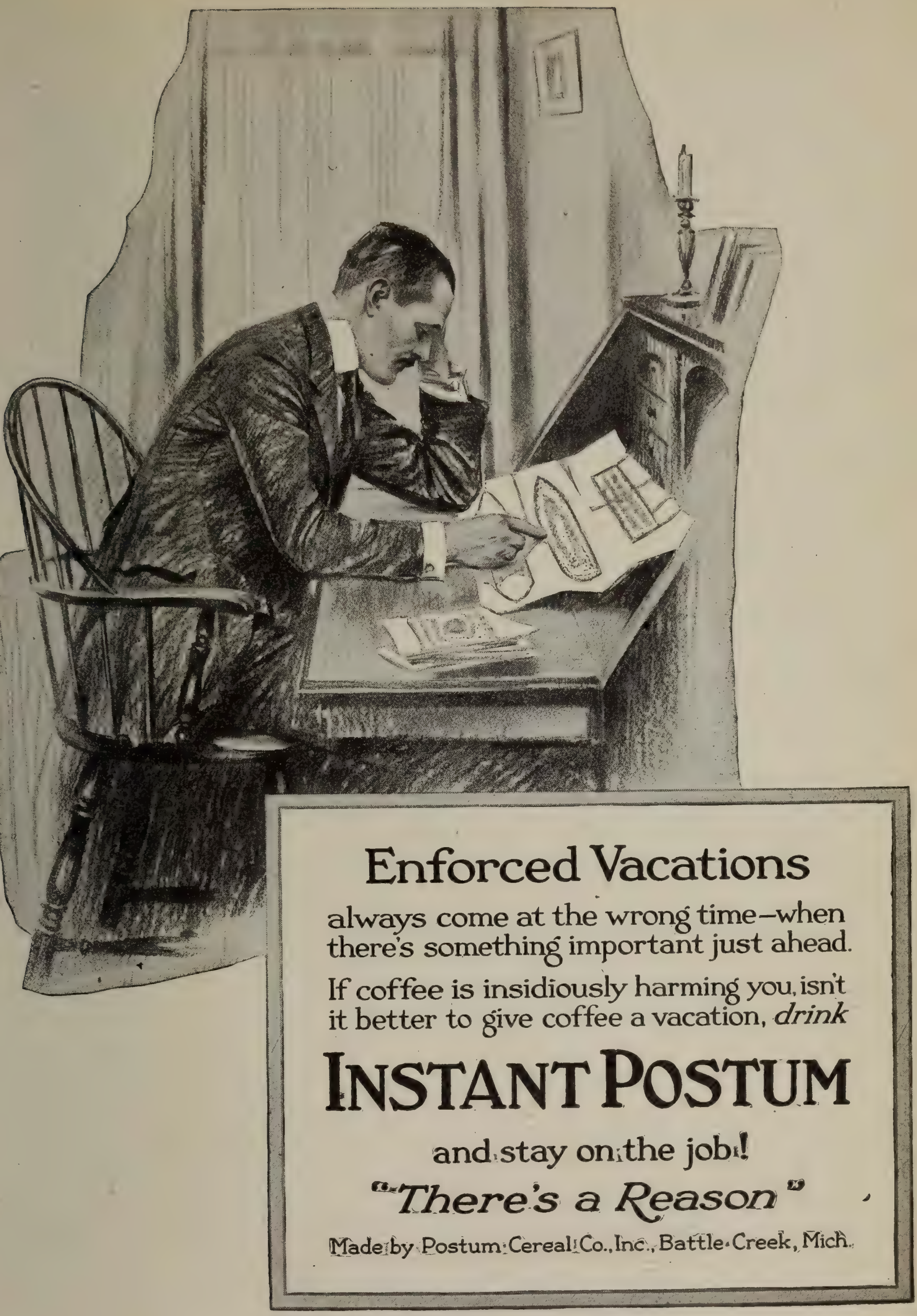
After weaning, food which is rich in lime should be taken at every meal. Greens and root vegetables finely mashed or in th form of purée should be freely used. Graham flour should be used instead of white. Malt sugar should be used instead of cane. Care should be taken that the bowels move four times a day. Give an enema of 3 to 4 ounces of water at 90° F., if necessary.

*12,365. Thumb Sucking.—E. D. V., Louisiana.*

Is there any remedy for thumb sucking?

*Ans.* This practice tends to produce certain deformities of the teeth and jaws and perhaps still more serious injury. Various measures of prevention have been adopted. The hands may be encased in mitts.

*(Continued on page 14)*



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always come at the wrong time—when there's something important just ahead.

If coffee is insidiously harming you, isn't it better to give coffee a vacation, *drink*

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shipped in small carton by *prepaid express* to any point east of Mississippi River. (Those living west of river, please write for delivered prices.) This fruit is fully tree-ripened—not gathered green and colored in the house. The oranges are of the famous "Parson Brown" variety, which is the finest-flavored orange grown. The grape fruit is the "Duncan," and has the true grape-fruit flavor. There is nothing healthier than well-ripened fruit, and this is especially true of grape fruit. These cartons will contain from 45 to 60 Oranges, or 20 to 24 Grape Fruit, and will be shipped about December 10.

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## Editor's Question Box

*(Continued from page 12)*

Various other plans have been tried, such as washing the fingers with a strong solution of quassia chips, which has an intensely bitter flavor. The surgical instrument dealers have an aluminum covering, very light in weight, that goes over the hands and fastens about the wrist. The movements of the hands are not at all restricted. After wearing this shield for a few weeks, the thumb-sucking habit will be entirely broken.

*12,366. Poultry.—I. H., Rhode Island.*

Is the flesh of poultry preferable to beef and mutton?

*Ans.* It was formerly thought that the flesh of fowls, particularly the white meat, contained less uric acid, and on this account was preferable, but according to Taylor and other physiologists, the flesh of fowls contains more uric acid than beef or mutton. The same is true of veal.

*12,367. Bran.—L. J. B., Wisconsin.*

Is bran taken with cereal flakes irritating to the bowels?

*Ans.* No, wet bran is emollient. Bran acts upon the bowels by titillation. Bran is a "scouring" food, but does not cause irritation. It is most efficient when used with paraffin oil in some form. It should be used freely, a tablespoonful or more at each meal.

*12,368. Turnip Juice.—E. E. G., Montana.*

Is there any substitute for orange juice in supplying vitamines to bottle-fed babies?

*Ans.* A research conducted at the Leister Institute of London has shown that the juice of the swede turnip is practically equal in value to lemon or orange juice in preventing scurvy. Lime juice has only one-fourth the value of lemon juice. The juice of carrots or beets has only one-tenth the value of orange juice. Tomato juice or purée has also recently been found to pos-

## Editor's Question Box

sess nearly the same value as orange juice.

These facts are highly important, since oranges are not always obtainable and are generally high in price. Everybody can afford turnips. Infants fed on sterilized cow's milk (and no other is safe) should receive daily two to four ounces of orange juice or swede juice. One-fourth dram of dried tomato pulp was found sufficient to protect guinea pigs from scurvy by Givens and McCollum.

*12,369. Time for Meals.—W. A. G., New York.*

What are the best hours for meals—especially for dinner?

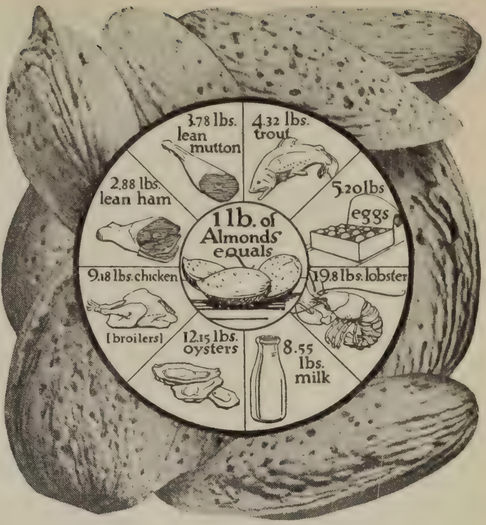
*Ans.* Food is fuel. It supplies energy to the body just as coal supplies energy to a locomotive. The body begins to receive energy from the food almost immediately after it is taken into the stomach. The intake of energy from food increases steadily for the first hours, then it begins to diminish. It is evident, then, that a hearty meal should be taken early in the day instead of late at night. A portion of the food taken is stored up in the liver for use when needed. When a hearty meal is taken at night, the liver has to carry a heavy load for some hours before it can be unburdened, and much to its disadvantage.

*12,370. Vinegar is Harmful.—H. H. M., Pennsylvania.*

Why is vinegar harmful?

*Ans.* Vinegar is acetic acid.

Boix of Paris, and other experimenters have made investigations with acetic acid which demonstrates that this acid is a poison and produces in the liver changes identical with those produced by gin. Sir William Roberts, many years ago, showed that acetic acid interferes with digestion, preventing the action of the saliva upon starch. A teaspoonful or two of vinegar was shown to be sufficient to entirely stop the action of the saliva.



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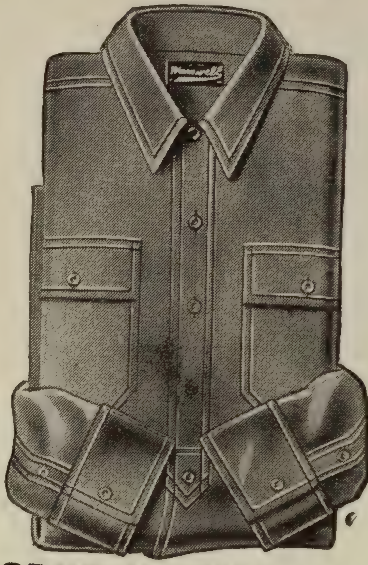

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# Book Notices

## The Founding of a Nation

For the first time, the early life of the Pilgrim Fathers is reproduced accurately in dramatic narrative. "The Founding of a Nation" is an historical romance, centering around the courtship of a Pilgrim maiden by the Cavalier who tells the story, Francis Beaumont. Woven into the tale are all the details and facts of the early struggles in New England; the attacks by the Indians; famines; the daily life of exploration, labor, love, worship; above all, the founding of those principles of liberty and democracy which have made the United States unique among nations.

The book represents a life of research. Historians have passed on its accuracy. The story is as romantic as a tale spun from the imagination; and in every detail it is true to the life of the time.

"The Founding of a Nation." The story of the Pilgrim Fathers, their voyage on the Mayflower, their early struggles, hardships and dangers, and the beginnings of American democracy. By Frank M. Gregg. New York: George H. Doran Company.

## The Health Question Box

For more than forty years, the writer of this volume has each week stood before an audience of invalids at the Battle Creek Sanitarium to open a popular question box. During a longer period he has supplied each month to the monthly journal, GOOD HEALTH, several columns of answers to correspondents. Out of the seventy or eighty thousand questions which have been thus dealt with, something more than a thousand have been selected, which, with their answers, constitute this volume. The reader will naturally expect to find the subject matter of this book highly practical in character, and in this we are confident he will not be disappointed. It is also believed that the range of topics considered

*(Continued on page 18)*

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*—the food product that brings increased nourishment and economy to every meal.*

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Recipe for Doughnuts

2½ cups flour
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The Teachers' Course fits one for teaching Home Economics in public and other schools.

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BATTLE CREEK - MICHIGAN

# Book Notices

*(Continued from page 16)*

is sufficiently large to cover in a fairly comprehensive way the whole subject of practical hygiene, as related to the home and individual.

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"The Health Question Box or A Thousand Questions Answered." By J. H. Kellogg, M. D., LL. D. Net $4.25 cloth and $5.75 three quarter leather.
Battle Creek: Modern Medicine Publishing Company.

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A study of the mind of the plain American, the bourgeois American, the type to which most of us conform, however unwillingly, in our thinking, our prejudices, our ideals, our limitations. This American has been aroused, made self-conscious, and race-conscious by the war. He has become important, tremendously important. His behavior (and his misbehavior) is affecting millions in Europe, and is portraying more clearly than ever the quality of his own soul. We all know him, most of us are him, but few of us have tried to think him out, as he stands now, when the world is ready to follow him as a leader, if he can lead.

This book, with its chapters on idealism and conservatism and radicalism, on education, literature, politics, and religion in the American mind, is an attempt to throw some light on the national type we have developed, its problems, its idiosyncrasies, its humors, its possible future.

"Everyday Americans." By Henry Seidel Canby. New York: The Century Company.

# GOOD HEALTH

·*Edited by*·JOHN HARVEY KELLOGG·M·D·LL·D·

Devoted to Race Betterment and Biologic Living

Vol. LV

No. 12

## Results of a Research on Tobacco

## Ill Health and Long Life

## Errors in Diet

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December, 1920

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They do not tax digestion. Every atom feeds. They are all-hour foods to be served in many ways.

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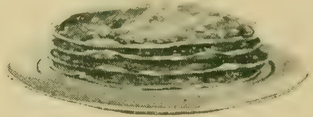

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This Medical Staff of the Battle Creek Sanitarium has at its command complete equipment for diagnosing human ills and restoring and preserving health.

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A stay here could hardly fail to benefit you in any case and you would find the surroundings most delightfully agreeable while getting back to normal.

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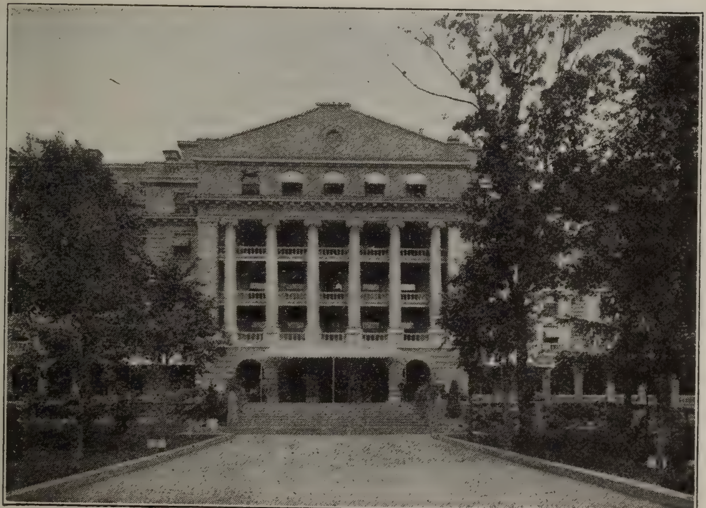

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## THE PROBLEM

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Illustration above shows one of our unit-owners—a California food expert—and his wife at a 3½-year-old paper shell pecan tree on our plantation; man (at right) directing attention to the massive trunk and great spread of branches on this young tree.

**Dr. J. H. Kellogg, head of the famous Battle Creek Sanitarium, points out**

## THE SOLUTION

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Record.

"Pecan production is destined to become one of the most important lines of orchard development in the United States," says page 1101, Vol. 54 of the United States Congressional Records.

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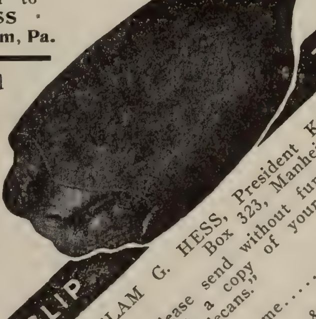

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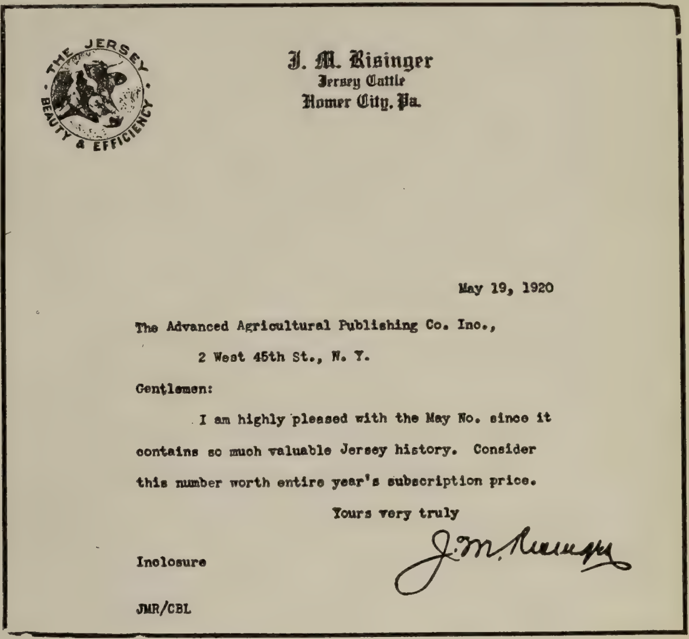

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